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VOL. XXXVIII. JULY—DECEMBER, 1858.

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THE

RETROSPECT OF MEDICINE:

BEING

A HALF-YEARLY JOURNAL,

CONTAINING A RETROSPECTIVE VIEW OF EVERY DISCOVERY AND PRACTICAL IMPROVEMENT IN THE MEDICAL SCIENCES.

EDITED BY

W. BRAITHWAITE,

LECTURER ON OBSTETRIC MEDICINE AT THE LEEDS SCHOOL OF MEDICINE, ETC.

VOL. XXXVIII. JULY—DECEMBER,

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A SYNOPSIS,

CONTAINING A SHORT ABSTRACT OF THE MOST PRACTICAL ARTICLES IN THE FOLLOWING PAGES: SHOWING, AT A GLANCE, THE MOST IMPORTANT INDICATIONS OF TREATMENT PUBLISHED BY DIFFERENT WRITERS WITHIN THE LAST HALF-YEAR. (ARRANGED ALPHABETICALLY.)

DISEASES AFFECTING THE SYSTEM GENERALLY.

AGUE.—In *old inveterate* cases of ague, which have resisted quinine, M. Barbaste recommends the trial of iodine. Give about ten drops of the tincture to a dose, three times a day, in a bitter infusion; in many cases the promptness of its results have been surprising. Dr. Manfredonia, of Naples, recommends it to be used as the iodide of quinine in doses of from one to two drachms per diem. (p. 6.)

CANCER.—In a great number of tumours there is a natural ebb-tide; at first they grow rapidly, then slowly, then remain stationary, and at last begin to waste, and may even almost disappear; sometimes the whole tumour may slough out. This is favoured most of all by a hopeful state of mind of the patient, and is aided by certain hygienic measures; a good nourishing diet, with beer or wine; bark and hydrochloric acid or iron, as a tonic. The best local application is lead, either in the form of plaster or lotion, according to the state of the tumour. Do not waste time with looking after impossible specifics. The tumour is the natural reservoir of the morbid matter; if this reservoir be removed by the knife or caustics, the morbid material is distributed over the whole system, provoking a return of the disease in a more aggravated and incontrollable form. (Mr. W. Cooke, p. 12.)

If for any reason the use of caustics be preferred to that of the knife, by the following means removal may be accomplished in half the time ordinarily occupied by such a process: Mix one part of chloride of zinc with two parts of arrowroot, and whilst the paste formed by the addition of a little water is still soft, roll into a thin sheet, which divide into arrow-shaped pieces of almost three inches long, and tapering to a fine point at one extremity. After drying, these pieces become quite hard. Whilst the patient is under the influence of chloroform, make a series of deep punctures round the circumference of the tumour, about an inch asunder, and forcibly

insert one of the arrows into each, taking care that the points from opposite sides meet beneath the base of the tumour. The vitality of the tumour will be very rapidly destroyed, owing to the caustic being applied to the root, and not the surface, of the tumour. (Mr. J. Alexander, p. 14.)

Carcinoma.—Professor Simpson recently removed a carcinomatous growth by applying around it, with a common pointed goose-quill, a thickish paste made of sulphuric acid and sulphate of zinc. The whitened and decomposed tissues were scraped through with the point of the pen, and the application made as before, so that in a few minutes the skin and a portion of the underlying cellular tissue were cut through. Two days afterwards the remainder of the tumour was detached in the same way. The edges of the tumour rapidly cicatrized, and pushed the tumour out in a mushroom-like form, leaving a small circular sore. (p. 14.)

Rheumatism, *Chronic.*—A case of most obstinate chronic rheumatism, for years resisting every form of treatment adopted, yielded to the use of the sulphurous vapour-bath. A bath was given every other day, the patient being well steamed for twenty minutes, and then, before leaving the bath, showered with cold salt water, to prevent a too relaxing action of the vapour. In the course of six weeks the man stated himself to be "perfectly cured." Dr. Williams has constructed a small wooden chamber for convenience in administering these baths, a full description of which will be found at p. 10. Artificial sulphurous water may be made by adding a drachm and a half or two drachms of sulphuret of potassium to a gallon of common water. (Dr. J. Williams, p. 9.)

Scarlatina.—Some pathologists think that there is a most intimate connexion between the materies morbi of erysipelas and that of scarlatina, as well as other acute diseases. During a late epidemic of scarlatina at Bradford, Dr. Meade being much struck with the analogy between the symptoms of this disease and erysipelas, very successfully applied the tincture of iron treatment, so useful in the latter, to the former disease, giving five to fifteen minims, according to the age of the patient, every three or four hours. He has only lost one case during the whole of last spring and winter, and almost all the cases in which he employed this treatment recovered with unusual rapidity. (Dr. R. H. Meade, p. 1.)

Scarlatina and Measles.—Mr. Witt looks upon the treatment of scarlatina and measles by ammonia as a specific. The dose given is from three to seven grains of the hydrochlorate every hour, for the first twenty-four hours, and every second hour for the next day. All acid drinks are carefully avoided. This is a matter of interest, now that the power of ammonia in retarding the coagulation of the blood has been established. (Mr. Witt, p. 2.)

AFFECTIONS OF THE NERVOUS SYSTEM.

Delirium Tremens.—The experience of Dr. Laycock is decidedly adverse to the use of narcotics with the view of inducing sleep: he has never witnessed a fatal case in which narcotics have not been administered, and has this last summer treated twenty-seven cases without either opium or stimulants, and all rapidly recovered. He does not believe the disease ever to be induced by the *withdrawal* of alcoholic stimuli. All muscular activity which, of course, exhausts, the nervous system, must be as much as possible avoided; and if the delirium be very violent, the use of chloroform carefully administered should supersede the strait-waistcoat. Suitable food should be given, but no alcoholic stimuli. Diaphoresis should be encouraged as an eliminatory process. If there be no important complications, the sleeplessness and delirium may be considered of no great pathological importance, and the result of a few days' careful management may be confidently waited for. (Dr. T. Laycock, p. 36.)

In the stage of excitement in this disease, try the effects of the inhalation of chloroform; it has been administered with considerable success at the London hospital. A case is related in which it was administered, and repeated again during the course of the day, both times inducing sleep, which lasted about four hours, and after the second administration of the drug the delirium entirely left the patient. The remainder of the treatment consisted in the administration of beef-tea and brandy, and subsequently cinchona and ammonia. (Dr. P. Fraser, p. 43.)

Infantile Convulsions.—In cases of convulsions which seem to exist and continue without any acute or appreciable morbid action or lesion in the nervous centres, and without any recognizable point of irritation in the peripheral parts, Dr. Simpson highly recommends the use of chloroform. Several interesting and successful cases are related by him; in one case the inhalation was continued twenty-four hours, except when it was necessary to feed the child; in another case, it was found necessary to keep the child, more or less, under the influence of chloroform for fourteen consecutive days, before all tendency to recurrence of the convulsions was eradicated. Chloroform probably acts as an antidote to that state of super-sensibility of the spinal system, which constitutes the essential pathological state upon which convulsions depend. (Prof. Simpson, p. 49.)

Myalgia, *or Muscular Pain*, is frequently mistaken for neuralgic, hysterical, or inflammatory affections: thus, it may attack the muscles of the walls of the chest and simulate pleurisy, or those of the abdomen and simulate peritonitis, being very severe in its character and accompanied by distinct feverish symptoms in both

cases, and even by tenderness on pressure in the latter. This affection will be aggravated by antiphlogistic treatment, but relieved by measures calculated to raise the tone of the system, as stimulants, tonics, generous diet, &c. (Dr. T. Inman, p. 19.)

Neuralgia.—The passage of an induced current of electricity through a nerve in its normal state, renders it for a time more or less insensible. This physiological fact may be made of the greatest practical utility in cases of neuralgia. To *sciatica*, and *tic douloureux*, the application of this form of electricity is particularly applicable. A case of sciatica is related in which great benefit and ultimate cure were derived from the passage of currents of electricity along the course of the sciatic nerve, the positive pole being placed near the tuberosity of the ischium, the negative one near the ankle. This mode of applying electricity is preferable to that by electro-puncture, which is accompanied in many instances by violent pain during the operation, and afterwards by inflammation and suppuration in the tissues punctured. (Dr. J. Althaus, p. 32.)

In Edinburgh the use of narcotic injections by means of a small glass syringe, with a sharp hollow needle, like the sting of a wasp, has become almost universal; if, in a case of neuralgia, it be introduced at the point where there is most pain on pressure, and a few drops of narcotic fluid be injected, instantaneous relief will often be afforded. In the case of elderly people caution is required, as the injection is apt to take a strong effect. (Dr. A. Wood, p. 22.)

By the Germans, muriate of ammonia is considered very valuable in cases of neuralgia, especially of the face. It has been lately tried by Dr. Wilks at Guy's Hospital with some benefit. A case is related in which a very bad attack of neuralgia of the face was completely and speedily relieved by this remedy, given in doses of half-a-drachm every hour in camphor mixture. The patient had had several previous attacks relieved by arsenic and quinine, but nevertheless recurring after a short interval. Three months had elapsed at the time of the report since the ammonia was administered, and no relapse had occurred. (Mr. H. C. Brenchley, p. 31.)

Toothache.—For the last thirty years, Mr. Hearder, of Plymouth, has been in the habit of using galvanism for the relief of toothache; those cases yield most easily in which the pain originates in the tooth itself. A metal disc covered with moistened cloth and connected with the positive pole is placed on the back of the neck, a similar disc connected with the negative pole being placed either on the tooth itself or gum; the degree of power necessary is very feeble. Most cases are relieved permanently, many for a considerable period, and very few not at all. Of course, in cases of abscess at the root of the tooth, the symptoms, as might be expected, are aggravated. (Mr. J. N. Hearder, p. 338.)

Traumatic Tetanus.—A case of traumatic tetanus was lately treated at St. Thomas's, with some degree of success by the administration of nicotine. At first, one-twelfth of a minim was given hourly, continued with a little brandy and water; this dose was gradually increased. The effects were found to be very transitory. It produced, at first, giddiness, profuse perspiration and nausea, together with a slower and feebler pulse, and marked alleviation of the muscular spasms. In about a quarter of an hour the pulse became fuller and stronger, the face flushed, and the tetanic symptoms as severe as ever. When given too freely, it produces faintness and sickness, even an intermittent pulse, without alleviating the symptoms. (Mr. J. Simon, p. 44.)

AFFECTIONS OF THE CIRCULATORY ORGANS.

Nævus.—An admirable method of ligaturing a nævoid tumour subcutaneously is the following: By means of a mounted-curved needle, pass subcutaneously one end of a ligature around one-half the base of the tumour, protruding it through the skin at a point opposite to its introduction; then withdrawing the needle, pass the other end round the other half of the base in the same manner; withdraw the needle again, then pass up a loop of the ligature under the central part of the base, protruding at the same puncture as the two ends, which latter now pass through the loop in opposite directions, draw tight, and tie. No skin is implicated at all, and scarcely any perceptible mark is left. The ligature may be pulled away in eight or ten days. See explanatory wood-cut. (Mr. J. Wood, p. 186.)

Where the use of the knife or ligature is contra-indicated, as in tumours about the orbit, it is a very advantageous plan to inject with a strong solution of tannin. Make an aperture with a very fine knife, such as the smallest-sized iris knife, and using a small syringe with a very fine point, and a solution in the proportion of a drachm to an ounce of water, gradually distend the nævus; all force must be avoided, as it tends to produce extravasation. (Mr. H. Walton, p. 240.)

A case of subcutaneous nævus on the left cheek, and about the size of a shilling, is related, in which the injection of a solution of tannic acid was very successful. The strength of the solution was a drachm of the acid to one ounce of distilled water. The syringe used was made of platinum, and with a screw action. There is not the risk of sloughing to which the use of perchloride of iron is liable. (Dr. F. Quinlan, p. 353.)

Nævus over a Fontanelle.—In passing a ligature through the base of a nævus situated over a fontanelle, with a view of strangulating the

tumour, would you use the ordinary sharp needles? No; for there is risk of puncturing the membranes of the brain. Puncture the scalp at either side of the nævus, and pass a ligature by means of a *blunt* needle-eyed probe beneath the base of the tumour. (Mr. J. Erichsen, p. 187.)

Varicose Veins.—In a case lately treated at University College Hospital, in which, from the varix being more diffused than usual, the treatment by pins and twisted threads was inapplicable, perchloride of iron was injected into the veins themselves, in four different places, by means of a minute trocar and canula. Immediate coagulation of the blood is caused by this proceeding. The patient complained of severe pain in the groin for two or three days afterwards, but with this drawback did well, the veins being obliterated. (Mr. H. Thompson, p. 188.)

AFFECTIONS OF THE RESPIRATORY ORGANS.

Asphyxia from Drowning.—*The Silvester Method.*—This plan of resuscitating the drowned is a simple imitation of natural deep inspiration. It is effected by lifting the ribs and sternum by means of the muscles passing from the shoulder to the chest, by steadily extending the arms up by the side of the patient's head. In this way the cavity of the chest is enlarged, a tendency to a vacuum is produced, and a rush of air immediately takes place into the lungs. Expiration is brought about by compressing the sides of the chest by the patient's arms. The patient must be placed on his back, with the shoulders raised, and the tongue drawn forwards, whilst the arms are used as above directed, as handles to open and close the chest. (Dr. H. R. Silvester, p. 404.)

Asthma.—The remedies at our command, either remove the exciting cause (as emetics to empty the stomach of an undigested meal), or diminish nervous irritability (stramonium), or directly lower nervous and muscular power (ipecacuan, tartar emetic, tobacco), or stimulate to activity the cerebro-spinal and voluntary nervous action, and proportionally diminish the organic and reflex (strong coffee, violent emotion), or seem to act as specifics, which some way or other diminish the asthmatic tendency, but whose true *modus operandi* is obscure (the airs of certain localities.) Remedies may be applied indirectly, that is, through the medium of the blood, or, directly to the mucous membrane of the bronchi by inhalation. (p. 53.)

In cases of a *purely spasmodic* nature, relief from the agonizing paroxysms will frequently be derived from the inhalation of the fumes of burning nitre-paper. The paper used should be blotting-paper of moderate thickness, and free from any ingredients which would cause the smoke to be of an irritating kind. The strength

of the solution of potash employed should be about four ounces to half a pint of water. If a piece of paper saturated in this solution and dried, be burnt in the bed-room of a patient before going to sleep, a threatened attack may frequently be warded off. (p. 54.)

Tobacco, which acts as a depressant, of all remedies gives the most speedy and complete relief, and would be much more extensively used but for the profound depression and collapse which it is liable to induce. But the mere sedative influence of tobacco is of no use whatever unless some degree of collapse is induced. An asthmatic may cut short the attack, by, directly the symptoms supervene in the early morning, overcoming the tendency to drowsiness, getting up and inducing a slight degree of tobacco nausea. (p. 57.)

Ipecacuan given in a large dose, never less than twenty grains, will frequently relieve the paroxysm directly a slight degree of nausea comes on. It may be taken in the form of lozenges, which can be made so strong that three will induce vomiting. Antimony acts in the same way as ipecacuanha, but the nausea and collapse it induces are long and tedious. If an attack be promptly treated it will generally yield, whilst, if allowed to proceed for an hour or two before treatment is adopted, great difficulty will frequently be experienced in relieving it. (Dr. H. Salter, p. 57.)

From a careful consideration of the relation of the stomach to the asthmatic paroxysm, the following simple rule is most important: *Let no food be taken after such a time in the day as will allow digestion being completed and the stomach empty before going to bed.* Certain articles of diet have a special tendency to oppress and tighten the breathing of those liable to asthma, as anything in any way *preserved*—as potted meats, seasoning, &c.; cheese is bad, especially if old and decayed; also heavy malt liquors. The quantity of food the asthmatic takes should be small, therefore it should be highly nutritious, but still of the plainest kind. (Dr. H. Salter, p. 440.)

Chronic Bronchitis, Asthma, &c.—In a considerable number of cases of chronic bronchitis, asthma, irritable cough, &c., striking relief has followed the inhalation of carbonic acid, and "in several chronic instances the benefit has been at once both speedy and permanent." A common wine bottle, with a perforated cork and caoutchouc tube attached, and containing crystallized tartaric acid and carbonate of soda, with a little water, are the materials required. The end of the tube may be placed in the patient's mouth and respiration be freely performed. The carbonic acid acts as a local anæsthetic. (Prof. Simpson, p. 447.)

Croup.—The laryngeal inflammation is merely a local expression of a general diathesis, or crasis of the blood, consisting in too great

plasticity or want of fluidity of the albuminous and fibrinous constituents. Mercurials, antimonials, sulphate of copper, and all remedies which have obtained any renown in the treatment of this disease act upon this state of the blood; but alkalies, of which, perhaps, carbonate of potash is the best, whilst they possess great fluidifying or antiplastic power, do not produce the bad effects resulting from the use of the other remedies. The salt should be given when, from the nature of the cough and other symptoms, the supervention of croup is suspected or feared. If croup supervene, plastic puriform mucus will probably only be formed, more rarely, proper false membrane. The local treatment consists in the application of a strong solution of nitrate of silver as low as possible in the larynx. Bleeding, emetics, and purges, are injurious, though in the latter stages an emetic of sulphate of copper will facilitate the expulsion of inflammatory products. (Dr. Luzsinsky, p. 91.)

Diphtheria.—The use of tincture of muriate of iron in this disease is much recommended, not indeed as a specific, but as a rational method of treatment. Its use should be commenced as early as possible, not desisting when the exudation has disappeared, but persevered with till the prostration has given way to the vigour of returning health. This treatment should be conjoined with the use of stimulants, and careful nourishment of the patient. A few drops of hydrochloric acid may be added to each dose of the tincture (about 25 minims every two or three hours), and the dilute acid may also be applied locally by means of sponges, and weaker gargles of the same may be used regularly. The use of nitrate of silver will not be found of any benefit in this disease. (Dr. T. P. Heslop, p. 81.)

Even in the mild form of this disease, except a brisk calomel purge, under no circumstances should any antiphlogistic measures be resorted to, but a liberal diet at once enjoined. In the severer form, if the practitioner be misled by the feverish excitement, and induced to adopt antiphlogistic measures, a fatal mistake would be committed. The disease is analogous to adynamic erysipelas, and requires wine and nutritious diet. Chlorate of potash and tincture of sesquichloride of iron are the medicines most calculated to be beneficial, and in some cases quinine. Mercury seems to be especially contra-indicated, and blisters are worse than useless. (Dr. C. D. Kingsford, p. 447.)

Foreign Bodies in Trachea.—In performing tracheotomy for a foreign body in the air tube, if the offending substance does not escape at the time of operation, or cannot be discovered, the tracheal tube is not adapted to maintain the patency of the opening made, as a foreign body could not readily escape through it. A strong metallic wire speculum, something like those used in operations on the eye, as invented by M. Luer, of Paris could be easily

modified so as to maintain the patency of the opening, and at the same time allow of the exit of any offending body. If such an instrument were used in cases of croup, any false membrane making its appearance at the opening could be extracted. The complete arrest of all hemorrhage would be necessary before an opening was made into the trachea, as the passage of blood into that tube would not be prevented by the speculum. (Mr. J. Adams, p. 189.)

Nasal Polypus.—*New Forceps.*—Mr. Gant has recently invented a pair of forceps for the removal of nasal polypi which *cut* and hold at the same time. "One edge of either blade is finished off somewhat like that of an ordinary pair of scissors; the other edge is broad and rasped. This combination of scissors and rasped forceps is a modification of the grape or flower scissors of the conservatories." This instrument may be obtained of Messrs. Weiss. (p. 190.)

Ozœna.—A very instructive case of ozœna is related by Dr. Druitt. There was a very offensive discharge from the left nostril, of twelve months' duration, following a cold in the head. There was no tenderness, or any outward sign of disease. By means of a large brass syringe, the affected nostril was syringed with warm water, to which a few drops of Condy's disinfecting fluid had been added. A mass of cheesy, tubercular-looking matter was expelled and the patient cured. In all these cases the nostril should be regularly washed out with warm water, slight astringents used if necessary, and the general health (which is always deteriorated), improved as much as possible. (Dr. R. Druitt, p. 438.)

Pneumonia.—*Bleeding.*—What are the comparative effects of practising or abstaining from bleeding in a case of pneumonia? Is one or the other practice indiscriminately to be adopted? The answer to these questions, abstracted from the evidence of some of the most eminent men of the day, may be given thus:—The non-bleeding plan has a demonstrable advantage over that of indiscriminate and repeated bleedings. The judicious practice of moderate early bleedings, general or local, in cases of more or less sthenic pneumonia, and of refraining from it altogether in asthenic pneumonia, whether as regards the character of the disease or the constitution of the patient, is pressed upon us both by experience and science.—(Ed. of 'Brit. and For. Med.-Chir. Review,' p. 75.)

AFFECTIONS OF THE DIGESTIVE ORGANS.

Ascarides.—Enemata of nitrate of silver may be used with great success for the removal of the *oxyuris vermicularis*, which so frequently infests the rectum in large numbers. The clyster is formed of argent. nitrat. gr. x. to xv. aq. dest. ℥iv.; two or three of these will effect a cure, the mass of dead worms being discharged. (Dr. Schultz, p. 108.)

In *threadworm* "I know of no medicine to be compared" to kamala, its action is not mechanical, as mentioned by Royle, but its activity is due to a soluble resin, which may be given in the form of pills, or a tincture of the drug may be used. A large number of cases have been treated very successfully at the Great Northern Hospital. (Dr. A. Leared, p. 107.)

Dr. Mackinnon in the 'Indian Annals of Medical Science' gives his testimony to the value of kamala as an anthelmintic. He considers it safe and more efficient than turpentine or kousso; three drachms is the dose for a strong European, but for a person of more feeble habit half this quantity, this may be followed by a dose of castor oil, if necessary. (p. 106.)

Diabetes.—Another case of diabetes very successfully treated by the internal administration of sugar (on the principle of compensating for waste) is recorded by Dr. W. Budd, of Bristol. From six to eight ounces of sugar were given daily, and the following diet:—Bread (common), 12 ounces; meat, 12 ounces; butter, 3 ounces; greens, 8 ounces; beef-tea, 1 pint; sherry, 4 ounces. Two eggs were also allowed daily, and 10 ounces of cod-liver oil were administered. The patient subsequently took a mild muriatic acid mixture with benefit. In little more than a month she increased a full seventh part of her weight, and at the same time the quantity of sugar decreased. By the last notes taken she was passing from 4 to 4½ pints of urine daily, of specific gravity from 1034 to 1037. (Dr. W. Budd, p. 114.)

Sugar ingested directly as sugar, is in its passage through the liver converted into an emulsive substance, which much counteracts the tendency to emaciation in diabetic patients. (The sugar found naturally in the blood is secreted by the liver from *albuminous* substances.) Now glucose is much more readily transformed into this emulsive substance than cane sugar, and consequently substances containing glucose, as honey and fruits, should be administered to patients in preference to ordinary sugar, as, if too much of the latter be administered at once, part gets into the blood unaltered, and is subsequently excreted by the kidneys, aggravating the disease. (Dr. Sloane and M. Claude Bernard, p. 123.)

The administration of loaf sugar soon nauseates the stomach. The supply of sugar should be more natural, consisting in the administration of sweet vegetables, as turnips, parsnips, &c. (Dr. G. Corfe, p. 119.)

The saccharine treatment of glucosuria is only beneficial provided the quantity of fluid allowed to the patient is limited. Out of ten cases reported, six in which no restriction was placed in this particular were not benefited, whilst the other four rapidly improved, the amount of fluid allowed being strictly regulated. (Dr. J. Sloane, p. 130.)

Dysentery, *Tropical.*—Give large doses of ipecacuanha, from a scruple or half a drachm to ninety grains. Its action is speedy, certain, and complete—the disease being summarily put a stop to. A delightful ease and freedom from pain succeeds this dose, and there is no inclination to stool for twenty-four or thirty-six hours, when a perfectly healthy evacuation succeeds. But some treatment is necessary in order that the stomach may retain such large doses of an emetic substance. For this purpose apply a sinapism over the region of the stomach, and simultaneously give a draught containing a drachm of laudanum. By this means the sensibility of the stomach will be diminished, and the ipecacuanha safely administered. It is occasionally after all ejected. It must then be repeated till the stomach does retain it. By this method of treatment the mortality from dysentery in the regiment to which the author was attached, was reduced from five or ten cases in every fifty treated to only one, and in this case death was owing to abscess occurring in the liver. (Mr. E. S. Docker, 7th Fusileers, p. 100.)

Dyspepsia of Phthisis.—We rarely have a case of phthisis in which there is not some disorder of the gastric functions, and it is of the greatest importance to successful treatment to remedy this state. There will frequently be untimely and excessive secretion of gastric juice, or excessive acidity from other conditions. This may be accompanied by vomiting (a common symptom arising from irritation of the pulmonary filaments of the par vagum). Here the most effectual remedies are vegetable astringents and bismuth. Hydrocyanic acid will probably rather aggravate the vomiting. When vomiting occurs soon after meals, or when solid food excites pain—in fact, when there is reason to believe an inflammatory state exists, the most effectual remedy is a light and easily digestible diet. A disposition to vomiting is always increased by a costive state of the bowels; this condition must therefore always be obviated by the use of mild aperients. (Dr. G. Budd, p. 97.)

Hare-Lip.—Frequently, in addition to the affection of the lip, the hard palate is also cleft, and one side of the alveolus projects very much, so as to cause quite a deformity of itself. In such a case make a vertical incision with a pair of bone forceps parallel to the edge of the fissure, so as to isolate the projecting part, which must now be forcibly pushed back. It will often quite fill up the gap. Of course this can only be practised early, or before ossification is completed. (Mr. H. Walton, p. 230.)

Hernia, *Inguinal.*—Mr. Wood, of King's College Hospital, lately performed a new operation for the cure of inguinal hernia, which may be briefly described as follows: Using a subcutaneous section-knife, with a sharp point, make an incision three-eighths of an inch long through the skin only, over the cord, and about an inch and a

half below the external ring. Carry the knife close under the skin, so as to separate a circle of the superficial fascia around the opening, of two inches in diameter. A small curved tube attached to a handle being inserted into the opening through the skin, must be pushed up into the inguinal canal, carrying the detached fascia before it. By means of a curved needle passed through the tube, one end of a stout silk ligature may be passed from within outwards through the external pillar of the external ring, and the other end through the internal pillar; and by moving the skin downwards and outwards whilst passing the first end of the ligature, and in the opposite direction, whilst passing the second, both ends of the ligature may be made to pass through one opening in the skin; they are then tied firmly over a small boxwood compress. The tube may now be withdrawn, and the external wound closed by plaster and a soft linen compress. Nothing more is necessary than rest, and cooling applications to keep down inflammation. The ligature may be removed in about five days. A truss should be worn for some little time, to consolidate the part, and protect the newly-formed tissues. (Mr. Wood, p. 191.)

In cases of *strangulated* hernia, particularly when the gut is much distended with flatus, the use of tobacco enemas does not seem to be sufficiently valued by the profession. Two cases are related by Mr. O'Donovan, of Dublin, in which the use of this form of enema, producing as it does complete nausea and relaxation of spasm, was speedily followed by reduction of the hernia by the taxis. In the third case of the nature related, the constitutional effects of the drug were not well marked, and hence the desired effect was not well marked. Three cases of obstinate constipation with hard and painful abdomen are also related, in which, after all other means had failed, even the use of ordinary purgative enemas, a tobacco enema rapidly produced a voidance of fæces, and relief to the symptoms. The following cautions being observed, the use of this drug is safe: The surgeon should always administer the enema himself, he should not leave his patient until reaction has thoroughly set in; and thirdly, he should always have a stimulant ready at hand, by which the depressing effects of the drug are readily counteracted. It is better to give the enema in small bulk, say half-a-drachm, or a drachm, in four ounces of water, perhaps less should be given if the patient be not a smoker. (Mr. O'Donovan, p. 319.)

Tænia.—The opinion is held by many eminent Hospital Physicians, that kousso and kameela lately introduced as possessing vermifuge properties are much vaunted, principally because new, and are wholly put in the shade by the old-fashioned olium filicis maris. (p. 463.)

Dr. Peacock, of St. Thomas' Hospital, considers kameela more efficient than kousso, but prefers the oil of male fern to either.

The resinous principle of the oil is apt to be deposited from the etherial solution, when the supernatant fluid is of course inefficacious. (p. 453.)

AFFECTIONS OF THE BONES AND JOINTS, &c.

Aluminium Sutures.—When union by the first intention is required, few will deny that silver sutures possess great advantages over ordinary thread or silk ones. Their great drawback is their great cost. Aluminium possesses all the pliability and other properties of silver, and is only half the price. Sutures may with great advantage be made of this metal, and will be found to answer quite as well as silver. (Dr. J. M. Frodsham, p. 210.)

Amputation by a Long and Short Rectangular Flap.—In the circular and ordinary transfixion flap amputation, though to the eye a good stump may be formed, yet it is found that pressure cannot be borne on the end of the bone, on account of the pain produced, and that as a general rule the cicatrix is adherent to the hard parts. To procure a more useful stump, and in the hope of somewhat diminishing the mortality of amputations (which in the London and Provincial Hospitals together is nearly one case in three for the last thirty years), at the Leeds General Infirmary amputation has been performed by a long and short rectangular flap. "The size of the long flap is determined by the circumference of the limb at the place of amputation, its length and its breadth being each equal to half the circumference. The long flap is therefore a perfect square, and is long enough to fall easily over the end of the bone. In selecting the structures for its formation, such parts must be taken as do not contain the larger blood-vessels and nerves. A flap so formed will be for the most part anterior in position as far as regards the general aspect of the body, but superior when the patient is in the recumbent posture, as during the after-treatment. The short flap, containing the chief vessels and nerves, is in length one-fourth of the other." Thus, if the limb be 16 inches in circumference, the long flap will be 8 inches by 8, and the short flap 8 inches broad by 2 long. The flaps are united lightly by sutures, one or more of which may be subsequently removed if tension come on. No dressing whatever is required in the early part of the treatment, thus disturbance of the stump is avoided; for in all these kinds of cases the non-disturbance of the plastic process is the chief point on which the future safety of the patient depends. Stumps obtained by this method of operating have a soft mass of tissues, devoid of large nerves, movable over the sawn end of the bone, which enables them to bear pressure on their extremity. This operation has been performed 56 times altogether, with a mortality of 1 in 7. Amputations of the leg for disease show a mortality of 1 in 27: in the London hospitals these ampu-

tations are attended with a mortality of 1 in $3\frac{2}{3}$. (Mr. T. P. Teale, p. 159.)

Anchylosis of the Knee.—In the treatment of this affection there has not hitherto been shown, generally speaking, sufficient patience on the part of the surgeon. In infants of six years of age the joints have been excised, that is, just at that period of life when successful treatment by extension is most to be hoped for. Even where from strumous disease, the tibia is dislocated backwards by *gradual* efforts, the bones may be restored to their place, and the disease subdued. (Cases related.) As the result of rheumatic disease, bony anchylosis is not uncommon, and requires much more energetic, or rather forcible treatment than strumous disease. In the straightening of contracted joints extension is wanted, not forcible rupture of contracted tendons and uniting bands, though subcutaneous tenotomy may be practised if necessary. If the slightest amount of motion be attainable on manipulating the joint, a favourable prognosis should be given. (Mr. H. Coote, p. 163.)

Partial Anchylosis of the Hip.—Even in a strumous patient, partial anchylosis, the result of inflammation of the hip-joint, may be successfully removed by rupture of the uniting medium, provided the case be favourable. All pain must have ceased and the disease be quite quiescent. In a case operated upon by Mr. Brodhurst, the pelvis being fixed with one hand, the thigh was suddenly flexed, the limb being jerked without much force being used. Very slight pain followed, and passive motion was not commenced till the expiration of eight days. Ultimately the patient entirely regained the use of the leg, when before she was only just able to touch the ground with the toes of the affected limb. The patient was a girl of 13 years of age, light-haired, and of a strumous complexion. (Mr. B. Brodhurst, p. 172.)

Diseases of Joints.—*Scott's Treatment.*—Scott's plan of treating chronic synovitis, strumous swelling, &c., of joints, though so commonly resorted to both in London and provincial hospitals, is not known by many country practitioners with whom we have spoken. For their benefit we briefly describe it: "The surface of the joint, suppose the knee, is to be carefully cleaned by a sponge, soft brown soap, and water, and then thoroughly dried; next, this surface is to be rubbed by a sponge soaked in camphorated spirit of wine, and this is continued a minute or two until it begins to feel warm, smarts, and looks somewhat red. It is now covered with a soft cerate, made with equal parts of the ceratum saponis and the unguentum hydragyri fort. cum camphora. This is thickly spread on large square pieces of lint, and applied entirely around the joint, extending for at least six inches above and below the point at which the condyles of the femur are opposed to the head of the tibia. Over this, to the same extent, the limb is to be uniformly supported

by strips of calico spread with emplast. plumbi. These strips are about one inch and a half broad, and vary in length, some are fifteen inches, others a foot, others half these two lengths, the shorter or longer of course selected according to the size of the part round which they are applied. This adhesive bandage ought to be so applied as to preclude the motion of the joint, to prevent the feeble coats of the blood-vessels from being distended by the gravitation of their contents. Over this adhesive bandage, thus applied, comes an additional covering of emplastrum saponis, spread on thick leather, and cut into four broad pieces, one for the front, the other for the back, the two others for the sides of the joint. Lastly, the whole is secured by means of a calico bandage which is put on very gently, and rather for the purpose of securing the plaster and giving greater thickness and security to the whole than for the purpose of compressing the joint." (Mr. J. Scott, p. 170.)

Flat Foot.—In severe cases, and always in congenital cases, the peronei and extensor communis digitorum tendons should be divided. Without this proceeding, the deformity always returns even after twelve or eighteen month's treatment by instruments. (Mr. Tamplin, p. 185.)

Fractured Patella.—*The Starch Bandage.*—The patient having been allowed to remain quiet for about twenty-four hours placed upon a V shaped-bed, and all muscular irritability having ceased, draw the fragments into contact as closely as possible, and whilst retained there by an assistant, apply a figure-of-eight bandage tightly round the joint, place some cotton-wool over this, and invest the whole by two pieces of stout pasteboard softened in warm water, one on the back, the other on the front of the joint, each being about ten inches in length, and that on the anterior having a piece cut out of its centre, so as to embrace the patella; the whole is then invested by successive rolls of bandage, imbued with thick starch, which when dry, forms a solid and unyielding casement. The leg and foot must then be bandaged evenly, to prevent œdema, and the patient may be allowed to get about. By this method of treatment perfect bony union was obtained in one case, and in the other of two cases treated, probably the same result might have been obtained, but that the man slightly bent the limb whilst the starch was yet soft. (Mr. W. Cooke, p. 183.)

Resection and Excision of the Phalanges.—In appropriate cases, such as caries of the head, ungual phalanx, or of the whole bone, excision of the bone, or excision of the head, is the proper treatment. In removing the head of a phalanx for disease of the joint, do not use the bone nippers but a fine watchspring saw, as the parts will heal more rapidly, and take care to extend the parts whilst healing to prevent anchylosis. Supposing the whole of the ungual phalanx to be diseased, do not amputate, but remove the whole bone, the sides of the tip of the finger should then be slightly

compressed against each other, and the part retained in an extended position. (Mr. E. J. Chance, p. 179.)

Spina Bifida.—In a case where the tumour is pedunculated, owing to the defect in the bony canal being very slight, and the neck of the tumour covered with ordinary integument, it is possible, safely and with success, to remove the projecting membranous bag by the application of ligatures. The ligature must be gradually tightened so as not completely to constrict the part for some days, and if great tension of the tumour come on, it may be relieved by puncturing with a fine needle. A case, the text of the above, is related by Dr. Wilson, of Glasgow, in which a firm cicatrix, and consequent cure, resulted. (p. 184.)

Surgical Operations.—*Electricity.*—The effect of electricity as a local anæsthetic agent in cutting operations has been tried at University College Hospital; it only seemed to modify the pain a little, making it more bearable; complete anæsthesia could not be induced. (Mr. Marshall, p. 337.)

AFFECTIONS OF THE URINARY ORGANS.

Addison's Disease.—This disease is not so much due to any vital action which the supra-renal capsules perform in the economy, as to the pressure or injury exerted by the enlarged organs on the semi-lunar ganglia and solar plexus, with both of which the capsules are intimately associated. Dr. Habershon adopting this view, first proposed by Dr. Copland, lately treated a case by the use of electricity, together with bark and iodide of potassium. Considerable relief was afforded. (p. 140.)

Albuminuria.—The happiest effects frequently follow the treatment of cases of albuminuria, early in the disease, by iron. It acts not solely by imparting red corpuscles to the blood, but by counteracting the commencing deterioration of the liquor sanguinis, which constitutes the very essence of the disease. It should be given for a long period, extending over many months, and combined with nutritious diet, and occasional use of jalap purges. A vapour bath may be given once or twice a week, and flannel worn next the skin. A case is recorded in which, under the use of iron, anasarca entirely disappeared; the urine became perfectly clear, and nine years after contained no albumen, though previously loaded with albumen. (Dr. C. Lees, p. 138.)

Calculus.—*Medical Treatment of.*—The use of alkaline remedies as solvents is of great importance; these should be given in much larger doses than are ordinarily exhibited, as, for instance, three drachms of carbonate of potash daily. Strong alkaline injections should also be frequently and perseveringly used. This medical

treatment may be successfully combined with surgical—the stone having been reduced to fragments by the lithotrite, the solution of the fragments should be attempted. The stones most readily acted on are those composed of earthy phosphates or cystine. (Dr. A. H. Hassall, p. 194.)

Renal Calculus, Passage along the Ureter.—What is the cause of the agonizing symptoms accompanying the passage of a renal calculus? Prof. Simpson says that the great distension of the tube by urine above the impacted calculus is the cause; and he has succeeded in relieving several cases by inverting the body and manipulating the affected side, on the same principle as you would invert a person with a shilling in his trachea. (p. 197.)

Incontinence of Urine, *Excoriation from.*—In cases where, owing to incontinence of urine from any cause (as vesico-vaginal fistula), there is distressing excoriation of the skin, a mixture of zinc ointment and glycerine is the application generally used at the Samaritan Hospital. (Mr. S. Wells, p. 210.)

Irritable Bladder.—The greatest relief will often be obtained from the injection of the bladder with carbonic acid gas. This may, if desired, be combined with the vapour of chloroform. A caoutchouc bag holding four ounces, and an ordinary catheter, may be conveniently used for this purpose, a space being left in the neck for a piece of sponge soaked in chloroform. (Dr. T. Skinner, p. 208.)

Stricture of the Urethra.—*Urethrotomy.*—Cut from behind forwards, and not backwards, as is the London practice. The risk of cutting the deep perineal fascia is much lessened. (Prof. Syme, p. 202.)

A Source of Danger in Division of Stricture.—Out of the great number of cases operated upon by Mr. Syme, he has met with two in which during the act of micturation, acute pain in the perineum was followed by quick pulse, delirium, and death. In neither were there any signs of local mischief, but in one the kidneys were gorged with blood to an extreme degree; besides these two cases, slighter symptoms of disturbance occurred in many others. It was noticed that these symptoms were always connected with micturition after withdrawal of the catheter, therefore probably proceeding from the action of urine upon a raw surface, produced by tearing of the imperfectly united wound in the urethra, and being of the nature of a sudden shock to the nervous system. To obviate this he introduces a short catheter by the wound in the perineum, about nine inches in length, and slightly curved in opposite directions at the extremities. By thus keeping the wound open a little longer perfect security is obtained. (Prof. Syme, p. 198.)

Obliterated Urethra.—The following plan is much more eligible than the old one of cutting on the point of an instrument at the seat of

obstruction. Pass a curved director with its groove upon the concave side through the fistulous opening into the bladder, which may always be very easily done, then push down upon it the instrument employed for guiding the incision in dividing strictures, so that the narrow portion of it is forced through the obstructing texture exactly in the proper course of the urethra, and thus conduct the knife with certainty in the proper direction. (Prof. Syme, p. 201.)

Sensitive and Contractile Stricture.—In cases of stricture so exquisitely sensitive that the passage of a catheter is followed by severe constitutional and local disturbance; also in cases in which immediately upon omission of treatment contraction begins to return, the operation of external division is most valuable. The above opinion of Mr. Bryant upon this subject is valuable, from the large amount of experience necessarily obtained at so large a hospital as Guy's. (Mr. T. Bryant, p. 204.)

Uric Acid Diathesis.—The causes may briefly be said to be too rapid disintegration of tissue, excess of animal food, mal-assimilation of food, and defective cutaneous excretion. The treatment is curative, or directed to the removal of these causes; and palliative, or directed to obviate their effects. The excess may be due to temporary causes only, and their palliative treatment may alone be called for. There is not necessarily any excess of uric acid in the urine, and there may even be a deficiency in the urine, but excess in the blood, as in some stages of gout, and in structural diseases of the kidneys. If the excess be owing to over-waste, as from exertion, inflammations, fevers, diseases of the heart, &c., lessen undue action; if owing to over-indulgence in animal food, reduce the amount of this; if owing to mal-assimilation, carefully regulate the quantity and quality of the diet, and strengthen the digestive organs by alteratives and tonics. Lastly, if the excess be owing to defective cutaneous elimination, endeavour to restore the normal action of this great gland. In all cases much nitrogenous food, or that likely to produce acidity, must always be avoided. Should the liver be at fault, give small doses of mercury, and gastrodynia, if it exist, will generally be relieved by trisnitrate of bismuth, oxide of silver, combined with hyoscyamus or hydrocyanic acid. If there be an anæmic or chlorotic state, the preparations of quinine and iron should be given with the food; the citrate of iron and quinine is perhaps the preparation to be preferred. If there be a gouty or rheumatic tendency, colchicum is of great value in many cases. In all cases great attention should be paid to air and exercise. The palliative means consist in the administration of various alkaline salts, which act by rendering the uric acid more soluble; these should be always well diluted with water. A full amount of these various salts, with their comparative merits, doses, &c., will be found at p. 156. (Dr. A. H. Hassall, p. 142.)

AFFECTIONS OF THE SKIN, &c.

Acne.—In *acne rosacea* and *acne simplex* an acid solution of iron (*i.e.*, sulphate of iron with excess of sulphuric acid) in half-ounce doses, is usually ordered at the Hospital for Skin Diseases, while for the tubercular form more confidence is placed in the iodide of iron. Any larger pustules than usual are touched on their apices with the acid nitrate of mercury solution. The contents of the distended sebaceous follicles must be squeezed out as soon as they become perceptible. (Mr. J. Startin, p. 226.)

Boils and Carbuncles.—Paint the whole mass of indurated tissue with at least three coats of the common Pharmacopœia tincture of iodine for several nights in succession, and unless the boil has been on the point of bursting, the progress will be arrested in nearly every instance, and the hardness, swelling, and tenderness of the part will quickly subside. (Dr. E. Rigby, p. 227.)

The local use of belladonna to carbuncles or boils, and other painful cutaneous affections, will be found to afford the greatest relief to the patient. (Mr. R. B. Cooke, p. 228.)

The great pain arising from carbuncles is in many cases relieved with remarkable rapidity by the application of the following ointment spread upon a linen rag: Take of opium half a drachm, white ointment two ounces, and mix. This treatment is applicable to any stage of the affection. (Dr. Gutzeit, p. 228.)

Chronic Inflammatory Affections of the Skin.—Most of the chronic forms of skin disease are nothing more than inflammation of the integument, peculiar in its character, perhaps owing to some constitutional cause. When you have this state—the skin indurated from chronic inflammation—there is nothing like a long-continued use of mercury in small doses. (Messrs. Startin and M'Whinnie, p. 224.)

Corns.—Painting inveterate corns with tincture of iodine three or four times a day, with a camel's-hair brush, will remove them in a very short time. (Drs. Varges and Wager, p. 228.)

Disuse of Soap in Skin Diseases.—The use of soap to the irritated part must always be avoided in any form of skin disease. A substitute must be made of a paste composed of bran, oatmeal, linseed, starch, and warm water; or yolk of egg and warm water to the scalp. (Mr. J. Startin, p. 229.)

Eczema, *Acute*.—The irritation of acute eczema will frequently subside most rapidly on slight ptyalism being induced. The bichloride of mercury is a good form for administration, and five or ten minims of colchicum may be given with each dose. (Mr. J. Startin, p. 225.)

Eczema of the Scalp and Face in Children.—In a case of this troublesome affection lately at the Hospital for Skin Diseases, Mr. Startin

ordered: Misturæ potassii iodidi ℥i., aq. ℥v., capt. ℥i. ter die. The surface to be washed with the yolk of egg and water, and smeared with the nitric oxide of mercury ointment. Rapid improvement took place in this individual case, and it may be taken as a fair illustration of the treatment usually adopted. The liniment consists of: Olive oil ℥ij., lard ℥ij., powdered nitric oxide of mercury ℥i., oil of bitter almonds gr. x., and glycerine ℥i. (Mr. J. Startin, p. 226.)

Lupus.—There may probably be suspected, in most of these cases, a taint of hereditary syphilis. The greatest benefit will frequently be derived from the use of mercury, or calomel and opium pill, combined with the simultaneous use of cod-liver oil. (Mr. J. Startin, p. 225.)

Pediculi Pubis.—Use the following lotion: Bichloride of mercury, twelve grains; rectified spirit, two ounces; distilled water, two ounces. Apply this carefully for ten minutes with a flannel, and immediately afterwards well dust the parts with ammonio-chloride of mercury. Repeat this night and morning for two days, then use a warm bath and soap. The ova will be destroyed effectually by this process. (Dr. Ryding, p. 229.)

Apply the following liniment for forty-eight hours: Finely levigated nitric oxide of mercury, two drachms; olive oil, one ounce; mix. (p. 229.)

Apply an ointment containing half a drachm of iodide of potassium to an ounce of lard. (p. 229.)

Rub in a large quantity of calomel at bed-time. One application will usually be sufficient. (p. 229.)

Scrofulous Disease of Neck.—In cases of gland disease of the neck with extensive ulceration of the adjacent skin, or in cases of what is called "cutaneous struma," the internal use of calomel and opium in minute doses, with cod-liver oil, is almost invariably ordered at the Hospital for Skin Diseases. This practice is contrary to the generally received opinions on the use of mercury, yet not only does no injury occur, but exceedingly favourable results as regards the local disease. (Mr. Startin, p. 225.)

Scrofulous Sores.—A solution of chlorate of potash (℥i. ad ℥iij. aquæ), may be employed with great success as a local application to scrofulous and other unhealthy sores. (M. Bouchet, p. 227.)

Small-Pox.—The following liniment applied over the parts when pruritus is severe, will relieve this most distressing symptom, and consequently much lessen the chance of pitting: rub up half-a-drachm of extract of belladonna, with half-a-drachm of spermaceti ointment; to these add $3\frac{1}{2}$ ounces of olive oil, and $2\frac{1}{2}$ drachms of chloroform. (Mr. E. W. T. Mandeville, p. 17.)

Ulcers of the Leg.—At the Hospital for Skin Diseases, the patient is always directed to bandage the limb, though no very particular attention is paid to this part of the treatment. Internally the mistura hyd. comp. is mostly ordered, and to the sore itself the unguentum rubrum is applied. If the ulcer is sloughy or very unhealthy-looking, the acid nitrate of mercury is applied as a caustic previous to the use of the ointment. Confinement is not insisted on. From the rapid healing which often ensues, probably the mercurial indication, both internal and local, has usually a considerable share in the cure. (Mr. J. Startin, p. 225.)

Cancerous Ulcers.—In a case of foul cancerous ulcer, at the Royal Free Hospital, the following lotion was used with great benefit: half-an-ounce of chlorate of potash, forty minims of hydrochloric acid, two drachms of the sedative solution of opium, and a pint of water (twenty ounces.) (Mr. W. Cooke, p. 16.)

Torpid Ulcers.—In the case of torpid ulcers on the legs of old people, where from the want of vitality in the part the sore will not heal, nothing is so useful as galvanism. A new character is given to the flabby granulations which spring up red and healthy, and the ulcer rapidly heals. The mode of applying it will be found detailed at p. 227. (Mr. H. W. Lobb.)

VENEREAL AFFECTIONS.

Gonorrhœa.—Professor Sigmund, of Vienna, from the experience of a very large number of cases, recommends sulphate of zinc injections in preference to others. They must not be used till the active inflammatory stage has subsided, and then they must be very weak. Sulphate of zinc rarely fails, acts mildly, and does not soil the linen. (p. 451.)

Secondary Syphilis.—*Communication of.*—A case is recorded by Dr. Elliotson, in which secondary syphilis was communicated from a lady's-maid (having cracks in the palms of the hands and other syphilitic symptoms), to her mistress, in whom it showed itself as an eruption at the fore part of the scalp where the hair is thinnest. There had been no breach of surface to account for this. The poison had probably been communicated from the maid applying pomatums and rubbing them in with the palms of her hands.

The third or cachectic stage of syphilis does not require mercury, and yields generally to hydriodate of potass or sarsaparilla; the hydriodate is incapable of curing true syphilis in either its primary or secondary stage. (Dr. J. Elliotson, p. 222.)

DISEASES OF THE EYE AND EAR.

Cataract.—*Catoptric Test.*—It is usually said that in a healthy eye you see two erect images from the cornea and anterior surface of the lens respectively, and a small inverted one from the posterior surface of the lens; but in a healthy eye the second erect image can scarcely ever be detected, and not one observer in twenty can tell whether the third is inverted or erect, except by its moving in an opposite direction to the candle: if this third image be present, we may decide upon the absence of cataract, as the transparency of the lens and its capsule is essential to its formation; if present, there is either an opaque lens or false membrane. The distinctness of the second erect image is evidence of some morbid change going on in the structures of the eye, though not of a cataractous nature, probably glaucoma, or milkiness of the vitreous humour. (Dr. J. B. Nevins, p. 241.)

Extraction of Cataract.—How to fix the Eye.—The following is a simple and most effectual plan of fixing the eye during this operation. With rather firm pressure, a little beneath the inferior margin of the cornea, securely clasp a somewhat broad portion of the conjunctiva and subcutaneous fascia, by means of a pair of ordinary artery forceps, deliver the instrument to an assistant, whose hand, supported upon the patient's cheek, receives it, and holds it as he would a pen. The lower lid requires no further depression, than that necessarily produced by the attachment of the instrument to the ball in this way. The operator must stand at the head of the patient, who is in the horizontal position. The eye will be found to be perfectly steady and motionless. (Mr. J. F. France, p. 242.)

Displacement of Pupil.—*Mr. Critchett's New Operation.*—This operation consists in displacing the natural pupil to another position, instead of making an artificial pupil, thus the natural pupillary margin is preserved. It is chiefly applicable to cases in which a limited leucoma constitutes the hindrance to vision, and in which the pupil is free from adhesions. The mode of procedure is as follows: With a broad needle, make an incision through the edge of the cornea at the side selected, just large enough to admit of the introduction of the canula forceps. Pass the latter instrument into the anterior chamber, and seize the flat surface of the iris at a distance of about a third of the breadth from the cornea to its pupillary margin. Draw the iris thus doubled on itself out of the wound, and with another pair of forceps armed with silk, seize the prolapsed portion and tie it, using two pair of broad-pointed forceps instead of the fingers. The silk used should be fine, but soft, and not tightly twisted. The ligature, which should be cut off close, drops out in a day or two, and the wound rapidly heals. (Mr. J. Critchett, p. 245.)

Entropion and Trichiasis.—After a deep wound of the scalp, a firm and depr ssed cicatrix remains, and the growth of the hair at this part is directed *towards* it. In the same manner, by excising deeply a narrow slip of skin, muscle. and fibro-cartilage just above the roots of the eye-lashes, a firm cicatrix is caused, and the lashes are directed outwards or towards the cicatrix, by this means the marginal portion of the orbicularis is involved in the cicatrix, whilst the eye-lashes are preserved; the removal of merely a portion of skin is very ineffectual, on account of its slight connection with the subjacent tissues. The mode of performing the operation will be found accurately described at p. 249. (Mr. J. F. Streatfield.)

The continued application of the compound tincture of iodine to the upper lid, has the effect of causing gradual contraction of relaxed tissues; in this way it is of the greatest use in cases of ptosis, causing contraction of the relaxed levator muscle, and in trichiasis and entropium, eversion of the inverted edge of the lid. (Mr. A. Carr, p. 253.)

Excision of the Eyeball.—The following is briefly Mr. Dixon's method of performing this operation: "The wire speculum having been introduced, the conjunctiva, elevated by dissecting forceps, is divided all around at the margin of the cornea with scissors curved on the flat and slightly rounded at their points. The tendon of the external rectus and the adjacent areolar tissue are next seized in the forceps and snipped through. An assistant now fixes the globe and draws it forcibly inwards by holding in forceps the insertion of the just divided muscle. and the superior rectus, the oblique and the inferior rectus, are in order snipped through. The globe now starts forwards, and the optic nerve having been easily reached and cut through, it is turned hind part before. and a few more touches suffice to divide the last remaining muscle, and to complete the operation." (p. 240.)

Sympathetic Inflammation of the Eyeball.—When an eye hitherto sound has become weak and inflamed through sympathy with the one which had been previously impaired. it can be rescued from destruction in no other way than by getting rid speedily and conclusively of the abiding source of irritation. This can be effected in two ways:—by cutting off the fore part of the eye, and evacuating the humors or by removing the inflamed eyeball completely, after division of all its muscles. (Mr. B. Bell, p. 237.)

Lime in the Eye.—Apply, drop by drop, under the eyelids, a strong solution of sugar. It can always be obtained, and completely prevents the caustic action of the lime. (p. 249)

Obstructions of the Lachrymal Passages.—The surgeons of the Edinburgh Infirmary bear strong testimony as to the efficiency of Mr. Bowman's plan of treating these cases. Our readers will probably recollect that this consists in slitting up the lower canaliculus upon a grooved probe, as far as the caruncle. The real place and degree of obstruction can then be readily ascertained, and treated with silver probes of various thicknesses. An opening through the skin is thus avoided. (Mr. B. Bell and Dr. P. H. Watson, p. 257.)

Patency of the Slit-up Canaliculus.—In all cases it is necessary to pass a probe occasionally through the wound made by the knife in Bowman's operation, in order to prevent adhesion of the two opposite surfaces. But where the operation is done for everted punctum, from thickened lower lid, when a larger opening and one nearer the eye is desirable, or in the case of timid nervous people, or children, who require much restraint during the operation, or when from any other cause subsequent interference is attended with difficulty, it is better at the time of operation to excise with the scissors a small portion of the posterior lip of the wound. This will effectually prevent adhesion. (Mr. Critchett, p. 259.)

Ophthalmia Tarsi.—Wash the edges of the eyelids, carefully removing any adherent matter from the roots of the eyelashes and Meibomian apertures. Carefully evert the edge of each eyelid, and and apply tinct. iodine by the aid of a fine camel's-hair brush; and in the intervening periods frequently apply glycerine in the same way. Quinine and sulphuric acid should be administered internally. By this treatment many cases ordinarily deemed incurable may be cured. (Dr. A. Macmillan, p. 256.)

Photophobia.—A few drops of chloroform evaporated from the palm of the patient's hand, and held near the eye, will generally allow a photophobic eye to be temporarily opened, for the purpose of examination by the surgeon. (Prof. Simpson, p. 346.)

Purulent Ophthalmia of Children.—The use of nitrate of silver, though undoubtedly quite sufficient to cure the disease, is attended with the disadvantage of causing great pain—so much so, that the mother, from mistaken tenderness, neglects to apply it. The use of chloride of zinc dissolved in glycerine, five grains to half an ounce, and applied about three times a day with a camel's-hair brush, is not open to this disadvantage. It may be dissolved by trituration in a glass mortar. Frequent ablutions should be used; and pure glycerine may be applied frequently to dilute the purulent discharge. (Dr. A. Macmillan, p. 247.)

Strabismus.—*Which is the Affected Eye?*—There is often the greatest uncertainty which is the eye to be operated on. To decide this question, place the patient in front of you, at the distance of two or three yards, and direct him to cover one eye, say the left, and look at you with the other, keeping the head straight; the right eye will be in the centre of the orbit. Then direct the patient to uncover the left. Now if the right, which has not been closed, is normal, it will keep its central position, while the left is turned inwards; but if it be deformed it will turn in, while the left will become straight. The experiment should be reversed. (Mr. H. Walton, p. 259.)

Divergent Strabismus.—Cases of divergent squint are much more difficult to remedy than those of convergence. In obstinate cases of this kind, where division of the external rectus fails to effect a cure, Mr. Critchett adopts the practice of bringing forwards the attachments of the internal rectus. The patient being under chloroform, with scissors and forceps, the conjunctiva of the inner side of the globe is divided at about a quarter of an inch distance from the corneal margin, for a length of three-fourths of an inch. Continue the dissection inwards, dividing freely the internal rectus, and the adjacent fascia and cellular tissue. A considerable flap is thus separated, and through its entire thickness, half an inch from its free margin, sutures are now placed. Then cut away a curved portion of the free margin, a third of an inch wide, and tie the sutures. About three sutures will suffice. This operation is not nearly so difficult to perform as it might appear. (Mr. Critchett, p. 261.)

MIDWIFERY, ETC.

Chloroform in Natural Labour.—The great rule in administering chloroform in natural labour, is to give it so as to allay pain, without destroying consciousness. You may thus, without danger, give chloroform for any length of time. (Dr. E. Rigby, p. 271.)

Dilatation of the Os Uteri.—The natural sickness of labour always has a beneficial influence in inducing relaxation, unaccompanied by subsequent evil; and for the same reason artificial nausea has a powerful influence in subduing rigidity of the os uteri or vagina, and is so safe in the administration that it is a well known fact that puerperal or peritoneal inflammations are rarely seen where tartar emetic as a nauseant has been judiciously given; there seems an almost perfect immunity of system from these diseases afterwards. An emetic dose should be given at first, and the nausea continued by diminished doses. It must always be first ascertained that there do not exist certain unhealthy conditions of

freely; their revivifying influence once seen can hardly be forgotten. The great thing to stop the hemorrhage is to empty the uterus, introduce the hand at once and remove the placenta, keeping up pressure externally with the other hand; this should always be done half-an-hour after delivery, if the placenta be not then expelled. (Mr. J. Thomas, p. 276.)

Premature Labour.—*Induction of.*—In a case related lately by Dr. Kirby, in which there was extreme distortion of the pelvis (the antero-posterior diameter was rather less than two inches and a-half), premature labour was induced and safely accomplished at the thirty-third week of gestation. The point worthy of note is, that uterine contraction was *originated* by the administration of ergot; no ill effects were produced upon the child, but had the membranes been ruptured for the purpose of inducing labour, and, consequently, before the os uteri had dilated, it is more than probable that the child would have been lost, and the mother's sufferings greatly increased. Probably the success of the operation depends, at least so far as regards the child, on the preservation of the integrity of the ovum, until the first stage of labour be completed. (Dr. E. A. Kirby, p. 272.)

Puerperal Affections.—The use of turpentine and opium in puerperal affections, though a treatment by no means new, does not seem to be sufficiently known or valued by the profession. The opium may be given in the form of pills, and the turpentine in that of enemata. Trousseau prescribed the opium at first in doses of 5 centigrammes during the day, gradually increasing to double the dose (centigramme =0·15432 grain); the turpentine may be administered, if given by the mouth, in the form of capsules. (M. Bonfils, p. 284.)

Puerperal Convulsions.—Chloroform.—Two interesting cases of puerperal convulsions are related, in which subsidence of the paroxysms and tranquil sleep followed the use of chloroform. In the first case the chloroform was given at each return of the fit, and about two minutes at each inhalation. The patient being of a very plethoric habit, ten ounces of blood were taken away prior to the administration of the chloroform. (Dr. R. T. Tracey, p. 300.)

Puerperal Fever.—When the fluids passing from the vagina are putrid and offensive (which of itself, if it cause not the disease, will at any rate greatly aggravate the symptoms from absorption of the poisonous matter), inject weak solutions of hydrochloric acid at frequent intervals. A competent person must be found to do this or it will not be done effectually. (Dr. T. P. Heslop, p. 84.)

URETHRO-VAGINAL FISTULA.—Two cases have lately occurred at the Samaritan Hospital of urethro-vaginal fistula, of very small size, where a single suture sufficed for the cure; in one case of silk, in the other of silver wire, though the latter seems most applicable, and can be readily fastened with a split shot, the ends being cut off. It should be removed on the sixth day. (Mr. T. S. Wells, p. 209.)

UVA URSI IN LABOUR.—In ordinary delayed labour, fifteen grains given in infusion every hour is as efficacious and far more innocent in its operation than secale cornutum. When rapid effects are desired, as in metrorrhagia, a decoction of 4 drachms to a quart of water should be employed, and given in frequent and divided doses. (Dr. Beauvais, p. 271.)

MISCELLANEA.

ÆSTHESIOMETER.—For a wood-cut and description of this instrument, invented by Dr. Sieveking, for the purpose of aiding in the diagnosis of certain forms of nervous diseases, see page 314.

CARBONIC ACID AS AN ANÆSTHETIC.—Æther, chloroform, and carbonic oxide determine anæsthesia by robbing the arterial blood of its oxygen, so as to produce carbonic acid, thus making the blood venous. Carbonic acid itself may be respired (if sufficiently diluted with air), with safety. An animal was put to sleep for 87 minutes by it; the sleep was perfectly tranquil; directly the inhalations are stopped the animal awakes. Death has never resulted as yet from this proceeding, as its approach is slow, progressive, and can be predicted for some time by observing the condition of the heart and pupils. (Dr. Ozanam, p. 349.)

CHLOROFORM.—If the operation is a very slight one, the minimum amount of anæsthesia necessary ought to be the practitioner's study. If the operation will probably occupy some time, give the chloroform more slowly, but more thoroughly, that its effects may be more lasting. Although, as is well known, chloroform should never be given on a full stomach, yet, if given after a prolonged fast, as of six or eight hours, alarming symptoms may supervene, from the exhausted state of the system. The use of Dr. Snow's inhaler is preferable to that of only a sponge or a handkerchief, as the poisonous vapour is introduced less rapidly, and is mixed with air much more uniformly and certainly. The only fatal case which has occurred to the author was one in which there was a weak, flabby heart. (Mr. H. Potter, p. 339.)

Chloroform as a Narcotic.—When opium is contra-indicated, or fails to act, in cases where it is desired to procure sleep, give thirty or forty minims of chloroform suspended in a little acacia mixture, or some other mucilaginous liquid. It generally succeeds in procuring for the patient two or three hours of tranquil sleep. (p. 339.)

Chlorate of Soda.—Chlorate of soda is considerably more soluble than the corresponding potash salt; it may consequently be given in a much smaller quantity of vehicle, and, moreover, the taste is less disagreeable. It has been employed with uniform success in several cases of diphtheria. (M. de Mussy, p. 371.)

Iodate of Potash.—The action of this salt is more powerful than that of the chlorate of the same base, and has, in our hands, yielded excellent results where the chlorate of potash had failed. (MM. Demarquay and Custin, p. 399.)

Iodide of Calcium.—This salt is very valuable in cases in which the iodide of potassium is inadmissible. It does not occasion iodism, or resorption of the healthy tissues. It does not excite the circulation, nor irritate the stomach and bladder, by passing off too rapidly by the kidneys. Its solution in milk is perfectly tasteless. It is particularly useful in squamous diseases of the skin, and chronic metallic poisoning by mercury, lead, and copper. (Dr. J. Pidduck, p. 394.)

Poisoning *by Strychnia.*—The poison of strychnia is completely neutralized by nicotine. In a case of poisoning by the former, take a cigar and infuse it in half a pint of water, which give in doses of one tablespoonful every five minutes. Probably by half the quantity is taken a favourable change will be noticed—the muscles will have become relaxed, the spasms less severe, and the intervals between them longer. The infusion may then be given less frequently. Of course, in a healthy person, such quantities of tobacco internally administered would produce serious effects; but in this case its effects are antagonized. (Mr. Haughton and Mr. T. O'Reilly, p. 316.)

Poisoning by Opium or Belladonna.—Opium and belladonna are mutually remedial, when either has entered the circulation in a poisonous dose. From this cause, if both be prescribed together, as with a view to lull cerebral excitement, the effect desired will not be produced, whilst if either be given separately it will. In cases of poisoning by opium, give a solution of belladonna—say a drachm of the tincture every half-hour, or, if it cannot be swallowed, inject

it subcutaneously. Conversely, in a case of poisoning by belladonna, opium may be used. Several cases are recorded illustrating this subject. (Mr. B. Bell, p. 325.)

Substitute for Human Milk.—Lentil powder, or, as it is called, Revalenta Arabica, contains phosphoric acid, chloride of potassium, and casein. Its nutritive is to its calorifiant matter in the proportion of 1 to $2\frac{1}{2}$, milk being in that of 1 to 2. Of all vegetable substances it forms the best substitute for human milk, being far preferable to pap, or pulp of wheat bread, which, from the absence of chloride of potassium and the too frequent presence of alum (the former of which is necessary to the solution of carbonate of lime, and the latter of which forms with phosphate of lime an insoluble salt,) is totally unfit for this purpose. As a food for children with atrophy and debility lentil powder is invaluable. (Dr. C. H. F. Routh, p. 396.)

PRACTICAL MEDICINE.

DISEASES AFFECTING THE SYSTEM GENERALLY.

Art. I.—ON THE TREATMENT OF SCARLATINA.

By R. H. Meade, Esq., Senior Surgeon to the Bradford Infirmary.

[The treatment of the severer forms of this disease is often most unsatisfactory, and the introduction of any remedy more successful than those in general use, would be a boon to the profession. Scarlatina has lately been very prevalent and fatal in Bradford, and the symptoms presented by many of the cases bore a close analogy to those of erysipelas, and were treated in the same manner by the author. Mr. Meade says:]

I had long been convinced of the value of the tonic and stimulant treatment in all forms of erysipelas, and formerly placed my chief confidence in ammonia: I found, however, that the mineral acids with quinine were more efficacious, and generally prescribed them, until a few years back, when the tincture of sesquichloride of iron was recommended. Though the value of this remedy has been doubted, I have found it so useful, that I regard it almost as a specific, both in the idiopathic and traumatic forms of the disease; and invariably prescribe it both in hospital and private practice; and I have been assured by other medical men that they have equal faith in its virtues.

Having so much confidence, therefore, in the tincture of iron in erysipelas, I determined to try it in scarlatina, and I have, accordingly, given it during the last winter and spring to every case that I have seen, with the exception of a few, which were so slight as scarcely to require any medicine. The success of this treatment has exceeded my expectations, and I have had only one fatal case since I commenced its use. Several cases, in which the symptoms set in with severity, were apparently cut short by it; and almost all the cases in which I gave it recovered with unusual rapidity. I give it in doses varying from five to fifteen minims, according to the age of the patient, every three or four hours; and when the throat is ulcerated I also apply a solution of nitrate of silver to the fauces. Several of my medical friends have tried the tincture of iron at my suggestion, and have reported favourably of its use.—*Med. Times and Gazette, June* 26, 1858, *p.* 661.

2.—*Scarlatina and Measles.*—Mr. Witt has just published a letter to Mr. Simon on the use of ammonia in scarlatina and measles. Mr. Witt looks upon the treatment by ammonia in these diseases as a specific, as much so as quinine in intermittents. The late Mr. Wilkinson stated that Dr. Peart had introduced the remedy, and did not lose one patient out of three hundred cases of scarlatina; and Mr. Wilkinson adds that for seventeen years he has never lost a patient from this disease, nor ever had a case that even appeared dangerous. Mr. Ricardo, who attended many large schools, had not lost a single patient out of some hundreds during twelve or fourteen years. The dose is from three to seven grains every hour for the first twenty-four hours, and every second hour for the next day. All acid drinks are carefully avoided. This is a matter of interest just now that the power of ammonia in retarding coagulation of the blood has been established, and it is curious as an illustration of the success attending opposite methods of treatment; for the use of acetic acid in the treatment of scarlatina has been gaining ground very rapidly of late, and the success which has followed its use has been very great.—*Med. Times and Gazette, June* 12, 1858, *p.* 606.

3.—GENERAL CONSIDERATIONS RESPECTING FEVER.

By Dr. C. Handfield Jones, Physician to St. Mary's Hospital.

[The following remarks are placed in the form of propositions, and the author recommends the reader, before perusal, to refer to the article "Sympathetic Nerves" in the Cyclopædia of Anatomy and Physiology, for a resumé of Bernard's views on this subject.]

1. Fever may result from pure nervous exhaustion. I am acquainted with two medical men who have suffered attacks of fever, to all appearance, in consequence of fatigue in walking. In such cases, it may be presumed that the sympathetic system has become affected, as well as the cerebro-spinal.

2. The nervous power of the cerebro-spinal system may be extremely depressed without fever being induced.

3. Paralysis of the vaso-motor (sympathetic) nerves is probably essential to all fevers.

4. In the majority of fevers, the nervous power of the cerebro-spinal system is greatly debilitated or impaired.

5. In all varieties of asthenic fever, debility and depression predominate. They may be more marked in some organs than in others, and may be variously combined with degrees of irritation; but still they give its character to the disorder.

6. All debilitating influences, in their less severe degrees, tend to produce a state of irritability; in their more violent action, they cause prostration. The character of irritability is weakness, together with an undue sensitiveness to all stimuli. In such states, there is often a

great display of force ("increased action"); but it is to be remembered that this takes place at the expense of the *radical* forces of the economy, which are drawn upon for the excessive development of the *acting*. Wild delirium and increased energy of circulation can only occur at the expense of the real power of the brain and heart.

7. In the sthenic and inflammatory fevers, the heart's action is excited, and increased in force, as well as in frequency. The cause of this may be presumed to be, that the blood, being hotter than natural, stimulates the heart unduly. The place of the heart in the vital economy, its highly developed structure, its peculiar power of not knowing fatigue, unlike other muscles, afford sufficient reason why it should be stimulated to increased energy of action, while the arterial muscles are more or less relaxed or paralysed. It has a higher responsive faculty. At the same time, the tissues of the body generally are not so much debilitated as in asthenic fever.

8. The causation of pyrexia attending on local inflammations may be viewed as follows. The blood traversing the inflamed part becomes altered in some way (perhaps by having an increase of fibrine generated in itself), so that it comes to contain matter, which may be compared to the miasm of fevers (idiopathic), like it producing irritating and debilitating effects. This view, which is Andral's, is adopted by Mr. Erichsen and Dr. Markham.

9. It may appear a contradiction to the above statements, that, in the more sthenic idiopathic fevers, and in certain pyrexiæ attending on inflammation, especially in the case of serous membranes, the radial artery is not paralysed, but rather contracted; the pulse is hard or wiry. This would not certainly prove that the swollen arteries are in the same state, but let it be granted that it does. Observation of the results of dividing the sympathetic nerve in the neck shows that relaxation of arteries and increase of temperature are not inseparably connected. The hyperæmia which ensues after the operation diminishes considerably in a day or two, though the elevation of temperature persists. Moreover, in repeating the experiment upon a cat, I found that the temperature became greatly elevated, without the existence of much apparent hyperæmia. It certainly did not appear that the increased heat could be accounted for by the hyperæmia. It is Bernard's opinion that the temperature is not augmented solely in consequence of the part lying in the range of the paralysed nerves receiving more blood, but that there is actually an altered state of the nutrition of the part. Brown-Séquard and Walter, on the other hand, ascribe the increased temperature solely to the increased afflux of blood. The circumstance that the temperature of the side operated on is sometimes 2° or 3° Fahr. higher than that of the internal parts is materially in favour of Bernard's view. So are also the phenomena of phlegmasia dolens, and some analogous *white inflammations* (as Dr. Graves calls them), in which, at the same time that there is swelling and increased heat, the pallor certainly indicates that the

arteries are constricted. In some cases, it may be that the vaso-motor nerves are so affected, so debilitated, that increased heat is produced by the derangement and hurry of the nutrition processes, while yet the arterial muscles retain power enough to be stimulated to contraction by the over-heated blood. Their contraction then might be explained in the same way as the increased action of the heart.

10. The accelerated action of the heart in fever (*i. e.*, the increased rapidity, not force, of its contractions) may very plausibly be explained by considering the medulla oblongata or pneumogastric nerve to be in a debilitated state. It is not indeed so fully established that section of the pneumogastric causes increased frequency of the heart's action, as it is that stimulation of it or of its origin retards or arrests it; but the conclusion is at least eminently probable. The rapid action of the heart, the palpitation, and breathlessness, which occur in anæmic girls, and males not anæmic but of weak tone, on any sudden muscular exertion, are more probably owing to debility of the par vagum and medulla oblongata than to any other cause. If a man in vigorous health attempt a feat of running or swimming, without having practised for a length of time, he will surely find that his "wind" speedily fails him; he will have much palpitation and panting; but if he is in training, he can bear the exercise without being blown. In this case, the improved power can scarcely be attributed to anything except the increased energy of the nervous system. The hurried action of the heart, as is well known, is in no wise of the essence of fever; paresis of other centres than the regulating cardiac is necessary to produce this effect.

11. In the more sthenic forms of fever and inflammatory pyrexia, the diminution of the cutaneous and urinary secretions, and of the salivary, is a phenomenon sufficiently constant to require notice. It stands in sharply defined contrast to the profuse flow which is common in states of debility. In various conditions, of which low nervous power is a prominent feature, a copious flow of aqueous urine is a common occurrence; and its connexion with some depressing mental emotion is often very apparent, as in the hysterical paroxysm, or the case of hypochondriasis related by Sydenham (Sydenham's Society's edition, vol. ii. p. 93). Profuse sweating during sleep is a common occurrence in aguish disorder, without any organic disease or regular fit. Salivation may occur as one of the manifestations of malarious disease. In the case of the kidneys, it is certain that there is not solely increased activity of the glandular tissue, but that the homogeneous membrane of the Malpighian tufts must be in some way altered, so as to allow the more free permeation of aqueous fluid. The same is probably the case with other glands. Now, in the sthenic febrile state, the reverse prevails; the homogeneous membranes are much less permeable by water than usual. In the sthenic fevers, again, this retention of aqueous fluid is not observed; indeed, the limiting membranes allow the transudation not only of water, but also of albuminous mat-

ter and fibrine dissolved in it, and even of blood. On what this difference in the filtering power of the limitary membranes depends, is quite a matter of guess; it seems, however, not improbable that it is in part dependent on the amount of fibrine in the blood. In the sthenic inflammations, the amount of fibrine is notably increased; and in these also the diminution of the secretions is, as a rule, most observable. The fibrinous casts of the renal tubes are often so purely homogeneous, that the idea seems naturally suggested that the limitary membranes may be strengthened and thickened by additions of this substance when it is circulating in excess. It is, however, certain that the filtering power of these membranes may be notably affected by variations in nervous influence. There appears to be a general accordance between the behaviour of the arterial coats and the capillary walls. In relaxed states of the contractile coat of the arteries, the capillary membranes are more permeable than usual, and *vice versâ*. The relaxation of the latter may proceed to that extreme degree in which they allow blood-corpuscles to pass through the softened texture, and ecchymosis or hemorrhage occurs. I have seen this twice in aguish disorder, as subconjunctival effusion.

12. The liability of the various organs and tissues to asthenic inflammation during the course of fever probably depends on their vital power having been so lowered by the action of the poison that a little hyperæmic afflux becomes a cause of irritation. The case is the same as when a part has been frostbitten, and the circulation has been restored too rapidly. On the same ground, when the sympathetic is cut in the neck of a debilitated animal, severe conjunctivitis sometimes ensues, because the enfeebled tissue cannot withstand the stimulus of the hyperæmia, intensified by the loss of the influence of the vasomotor nerves. The diarrhœa of intestinal typhoid, and its follicular deposits, seem to me to be well explained in this way.

13. An occurrence which I think is more frequent in malarious fever, but which Dr. Corrigan speaks of as not unfrequent in typhus, or rather as a sequela of typhus, of late years, is jaundice; the skin and urine being deeply tinged, though the flow of bile into the intestine goes on freely. In this case, it may be presumed that the hepatic plexus is paralysed, and the liver in the same state as the side of the head when the cervical sympathetic is divided. Bile is secreted in excess, and a secretion-flux takes place. This, however, would not occur if the vitality of the liver were much depressed; the result would be rather inflammation. Turpentine, which cures the jaundice, acts no doubt in the same way as when it arrests a gastric hemorrhage, stimulating the relaxed vessels to contract through the medium of their nerves.

14. The treatment of fever is to be ruled essentially by discriminating observation of the predominant pathological state, whether this approach nearer to excitement and irritation, or to pure debility and asthenia. In the former case, it may be needful to bleed largely,

as in tropical fevers (*vide* Dr. Copland, *Fever*, p. 930); to give tartar emetic and opium, as Graves did in typhus with violent delirium; or apply leeches to the temples, as Dr. Corrigan recommends in states of insomnia; or, as we so often do in the diarrhœa of typhoid, to leech the region of the cæcum, and give hydrargyrum cum cretâ and Dover's powder. All these are instances where lowering means are employed, with guarded caution, to quiet excited action. In the latter case, quinine, wine, and brandy, are to be administered freely, according to the requirement of the individual case. Dr. Stokes', Dr. Brinton's, and Dr. Shute's recorded experience is quite in accordance with my own. I may add, that I cannot but think the old idea that brandy and wine act beneficially by their stimulant effect on the nervous system, is far more satisfactory than the chemical notion that they act by affording a ready fuel to the respiratory process. It is the nervous system which most of all feels the effect of the poison; and it is reasonable to address our remedies chiefly to it.

15. In the treatment of pyrexia attending on local inflammation, it is impossible to prevent the effect while the cause continues. Any tonic or stimulant that could be administered to stay the paralysis of the vaso-motor nerves, would act injuriously as an irritant upon the inflamed tissue, impede excretion, and increase the existing mischief. Thus, in febrile eczema, arsenic aggravates the skin-disease and the associated pyrexia. As long as the inflammation is of sthenic character, we must apply our efforts to reduce it; in the case of eczema, we leech the skin, or apply lead lotion, and give saline aperients. When, however, the inflammation has become asthenic, or is so from the first, there is either no fever, or it will yield with the inflammation to tonics. Thus, non-febrile eczema is often cured by arsenic, which probably tones the cutaneous vaso-motor nerves, and so contracts the arteries of the inflamed part. The distinction between sthenic and asthenic inflammation, as to the effects of treatment, is all important, and seems sadly lost sight of in the blood-letting controversy.—*British Med. Journal, Aug.* 7, 1858, *p.* 644.

4.—*Iodide as a Febrifuge.*—M. Barbaste tried the effect of this substance in three cases of old intermittent and paludal cachexy, for which quinine had been given in vain. He was quite surprised at the promptitude of the results he obtained from administering 30 drops of tincture of iodine in a bitter infusion in the twenty-four hours, divided into three doses. M. Seguin had, indeed, as far back as 1846, recognised the utility of iodine in obstinate chronic ague, which resisted quinine: while Dr. Manfredonia of Naples, in 1855, found that very obstinate cases yielded rapidly to the iodide of quinine, in doses from 1 to 2 drachms per diem. Thus far the iodine has been found only applicable to old, inveterate cases.—*Revue Méd.—Med. Times and Gazette, July* 3, 1858, *p.* 15.

5.—RESEARCHES ON GOUT.

By Dr. A. B. Garrod, Physician to University College Hospital.

(Read before the Royal Medical and Chirurgical Society.)

The author divided his communication into two parts; in the first were detailed the results of his analyses of the urine in the different forms of gout; the second was devoted to the consideration of the influence of the different forms of colchicum upon the urinary secretion. After describing the method of analysis employed in arriving at his results, and speaking of the opinions usually held upon the subject of the urine in gout, Dr. Garrod proceeded with the first part of his paper, the cases in which he subdivided into three classes.

1st Class.—Cases of acute gout, occurring in patients most of whom in the intervals of the attacks enjoyed pretty good health. About thirty analyses for uric acid made on the twenty-four hours' urine of several different patients were detailed, and a few for the determination of urea; and from these the following deductions were drawn. In the earlier stages of acute gout, the urine, for the most part, is small in quantity, and the uric acid, measured by the twenty-four hours' secretion, diminished; that this acid is thrown out in much larger quantities as the disease becomes mitigated, and that these amounts, even above the patient's daily average, may be passed, forming sometimes critical discharges; and lastly, the acid again becomes lessened, although not to the extent which occurs either just before or at the commencement of an attack. That the urea is usually thrown out in about the normal quantities, although its free elimination by the kidneys is often somewhat impeded, and, in consequence, the blood contains a small excess, which may possibly explain, in some measure, one peculiarity of gouty inflammation when it attacks superficial parts, namely, the presence of œdema and the subsequent desquamation of the cuticle. That occasionally a trace of albumen exists in the urine, but very seldom, compared with its occurrence in the chronic forms of the affection.

The 2nd Class included cases of chronic gout, the majority of which were not suffering from any urgent symptoms, but many were afflicted with some of the sequelæ of the affection, as shown by the concretions of urate of soda upon different parts of the body, and the stiffened condition of the joints. More than sixty analyses for uric acid were given in this class, made upon the day's urine of fourteen different individuals, and numerous determinations of urea were also detailed. The deductions from these observations may be thus summed up:—The urine in chronic gout is usually rather pale in colour, below the average tint in the healthy subject, of low density, and increased in quantity. The amount of urea, except in extreme cases, the same as in health (due account being taken of the diet of the patient at the time the urine passed). The uric acid was very much diminished indeed, and subject to excretion in very varied quantities at different

times; and, lastly, the presence of a small amount of albumen is exceedingly frequent. Deposits in the urine are not of common occurrence in these subjects; but they occasionally occur on the cooling of the fluid, sometimes in the form of urate of soda or ammonia, at other times crystallized and more or less coloured rhombs of uric acid.

Class 3.—Urine of individuals who had suffered more or less frequently from attacks of acute gout, of varying degrees of intensity, examined at the time of complete freedom from any symptoms of the disease. Several determinations were made on the urine of six individuals, and the following results arrived at: In no one of the six patients' urine did the amount of uric acid reach the quantity usually considered to be the average in health: in most of them it was far below, and it would appear that the kidneys in such individuals are apt to lose some of their excretory power for this body, a circumstance which must necessarily render the blood impure, and account for the liability which such patients possess to periodic visitations of this malady, and the great difficulty of effecting a radical cure of the disease.

Part 2 was devoted to an examination of the influence of colchicum upon the urine. The usual opinions held by different authorities, as Christison, Chelius, &c., upon the modus operandi of this drug were first related, and many of the analyses brought forward in their support were shown to be very fallacious, the error arising not from any fault in the analyses themselves, but from small specimens of urine, passed at particular times of the day being examined, and no account taken of the twenty-four hours' elimination. Between fifty and sixty analyses, showing the amount of the uric acid eliminated, were given, together with numerous determinations of the urea. The result of these observations on the action of colchicum were as follows:

In one case, where no gouty affection existed and no febrile disturbance was present, colchicum appeared to have the effect of slightly diminishing the quantity of urine, and likewise of diminishing somewhat the excretion of uric acid.

In a second case, similar to the above, the influence of the medicine was notably to diminish the quantity of urine, the uric acid being slightly increased, but the increase was less than a quarter of a grain per diem.

In case 3, a gouty patient recovering from an acute attack, the uric acid was somewhat increased during the administration of colchicum, but not in a greater degree than frequently occurs under such circumstances when no medicine is given.

In case 4, both the urine and uric acid were diminished by the influence of the drug; and so on for the other cases.

The author considered, as the results of his analyses:

1st. That there is no evidence to prove that colchicum produces its effects upon the system by causing the kidneys to excrete an increased amount of uric acid, but that, in fact, the reverse would seem to hold good.

2nd. That colchicum is not always a diuretic, but often diminishes the renal secretion, especially when its action is exerted upon the alimentary canal.

3rd. That colchicum has no marked influence on the excretion of urea.

An appendix to the paper contained the results of seventy-two analyses, performed on consecutive days, of the urine of a gouty patient; and the results exemplified in a marked manner the peculiar mode in which uric acid is frequently eliminated in such cases, and also tended to confirm the conclusions arrived at with respect to the action of colchicum upon the excretion of this principle.—*Lancet, June* 26, 1858, *p.* 628.

6.—A CASE OF OBSTINATE CHRONIC RHEUMATISM CURED WITH THE SULPHUROUS VAPOUR-BATH.

By Dr. James Williams, Woburn, Bedfordshire.

[The patient, aged 60, a labourer, had for years suffered from a most intractable form of rheumatism, he was almost crippled for labour, and spent his nights in restlessness and pain.]

The principal parts of the body affected were the feet and ankles. He had, however, pains and soreness in the shoulder, back, &c. These pains frequently moved about, and were not always present; they were sometimes in the hands. His general health was unimpaired, though the feet were constantly swollen, with great turgidity of the bloodvessels, rendering them partly varicose. The ankles are nearly stiff, and have been so for about two years. This circumstance made walking extremely painful and difficult, and if by chance he stepped upon a stone or an unlevel surface, the pain was so great as to cause him to almost sink upon the ground.

Amongst other remedies, I had tried to relieve him with colchicum, alkalies, lotions, embrocations, &c., which were not of the least service, and thus the case was given up. Some time after this a benevolent lady in the village applied to me on his behalf to know whether or not the sulphurous vapour-bath used by myself would relieve him, to which I replied in the negative. However, as she very much wished a trial to be made, I therefore agreed to give him a chance. I commenced with three baths, allowing an interval of one day between each. He was well steamed for about twenty minutes, and then showered with cold salt water before he left the bath. This practice I always adopt, as it seems to brace up the skin, and thus to fortify the system from a too relaxing action of the vapour. After these three baths he seemed much relieved, and the stiffness of the ankles considerably diminished. It now occurred to me that the principal disease being situated in the feet, the local application by means of a steam-bag would be sufficient to meet the requirements of his

case, and it was consequently adopted. This mode of application was of no service; indeed he said he felt worse in his health, and therefore at his particular request returned to the general vapour-bath and shower afterwards. I gave him in addition, as he had a good deal of red sediment in his urine, a little bicarbonate of potash and tincture of colchicum, in a solution of the Heath Cottage sulphurous water from the spring near Leighton Buzzard, twice a day. This he continued until he had had in all about seventeen sulphurous vapour-baths, with an interval of a day or two between each bath.

His recovery was progressive and steady, and in the course of about six weeks he had regained entirely the use of his ankles, could sleep soundly at night, and labour without pain or inconvenience. No wonder, then, that he presented himself at my surgery one morning, with a face beaming with gratitude, to express his thankfulness at being "perfectly cured." I must say I had no idea that such a result could follow in a case so obstinate as his. The patient has a ruddy complexion, and is, no doubt, of an inflammatory habit of body. Here there is the clue to our success. The use of this sulphurous water has been of marked benefit in rheumatism, and when conjoined with the vapour-bath, or made the basis of the steam, no doubt it acts as a great purifier of the blood, and by the free perspiration induced relieves the system of many impurities, which circulating in the blood, are deposited in the various tissues, particularly the muscles and ligaments of large joints, giving rise to painful contraction in the muscles, and impediments to free action when deposited about joints.

Some persons may suggest that the potash, colchicum, &c., were the principal agents of cure in this case. This, however, may be safely refuted by stating that it was freely given, and tried in all its forms for years, with no benefit; in short, the case was not relieved at all, except by the use of the sulphurous vapour bath.

While upon this subject, I must express my regret at the falling off in the use of baths generally. Doubtless, many obstinate cases which now fall to the care of quacks and other pretenders might have been cured by orthodox practitioners with the aid of baths. I look upon the vapour bath as one of our most potent weapons in most chronic and many acute affections, and skin diseases, especially those where dryness and great irritation exist. I have lately cured a very obstinate case of scrotal herpes, in a gouty subject, where dry vapour, lotion, ointment, and other remedies were of no avail. This case, however, will more properly form the subject of a separate paper. It should be remarked, that though upwards of three months have elapsed of trying changeable winter weather, the rheumatic case continues a good and perfect cure, no return of the symptoms having taken place, the patient being able to attend to his ordinary daily labour, and walk miles to and from his work.

My vapour bath consists of a small wooden chamber, about four feet by three, and five feet high; it has doors that open and close like

a cupboard; it has also a perforated zinc box fitted in the top, closed by a lid, which, when partially removed, acts as a valve to allow the exit of superabundant steam; this opening admits of water being poured from a large jug or other vessel over the patient while sitting in the vapour below. There is also a small zinc box, with a perforated lid fitted to the bottom of the bath, this receives the condensed steam or shower, and is emptied by a small tap underneath the floor. It is altogether very complete and inexpensive; and I shall feel much pleasure in showing it to any of my medical friends should they think it worthy of examination.—*Lancet, June* 12, 1858, *p.* 580.

7.—ON GONORRHŒAL RHEUMATISM.

By M. Hervieux.

Although Dr. Brandes, of Copenhagen, in his essay, has determined affirmatively the fact of the direct influence of gonorrhœa in the production of rheumatism, his views are not so generally accepted as to render the record of additional illustrations superfluous. When the frequency of the two diseases is considered, together with the possibility of their coincidence in some cases, as well as the silence of authors as to their relationship, it is not surprising that the reality of the pathogenic influence of the gonorrhœa may still be doubted by many. One pathological fact is however, admitted by every one, inasmuch as examples of its occurrence are frequently met with, viz. gonorrhœal arthritis; and from this to rheumatism is but a step. M. Hervieux was long since impressed by a case, which proved to him that in subjects predisposed to rheumatism, gonorrhœa may give rise to acute polyarticular rheumatism. A man, aged 25, in whose family rheumatic affections were hereditary, became, during the course of a gonorrhœa, the subject of acute rheumatism, which, affecting all his joints, terminated at the end of six weeks. Six years after this attack he acquired a new gonorrhœa, and in a fortnight acute rheumatism again appeared, requiring two months' treatment. When the rheumatic pains commenced the discharge diminished, to cease as soon as the joint-affections became generalised; but no sooner did improvement commence in the articular affections, than the gonorrhœal discharge returned again, the urethral inflammation becoming intense, and the discharge persisting after convalescence. In this case, the rheumatism showed a tendency to localise itself—first in the shoulder, and then in the knee. Of thirty-four cases collected by Dr. Brandes, the knee was affected in twenty-eight, being the first joint attacked in fifteen. In another case, which has recently occurred, the author found what seemed to be simple gonorrhœal arthritis, passing into the state of gonorrhœal polyarticular rheumatism.

He believes that the following conclusions may be drawn from Dr. Brandes' and his own observations. 1. Although presenting the

migratory character proper to all rheumatic affections, gonorrhœal articular rheumatism exhibits a remarkable tendency to localise itself, and that especially in the knee-joint. 2. From the cases collected by Dr. Brandes, it would seem that this form of rheumatism is very rarely complicated by heart affections. In the author's two cases, however, palpitations, oppression, and a persistent *bruit de soufflé* were observed. 3. Although the urethral discharge may become completely suppressed at the time of the invasion of the rheumatism, and reappear with all its former intensity at the period of convalescence, yet it may also persist in other cases during the articular affection. 4. When a rheumatic affection has been produced under the influence of a first gonorrhœa, a second attack of this last is frequently followed not only by a second attack of rheumatism, but also by an attack affecting the same form as the other. 5. All the cases collected by Monteggia, Cumano, and Brandes have been observed in the male sex. 6. It usually terminates by resolution, but owing to its tendency to localisation it may give rise to white swelling and anchylosis. 7. The prevention of or combating such localisation by energetic measures is the most important therapeutical indication.—*Gazette Méd.—Med. Times and Gazette, July* 10, 1858, *p.* 41.

8.—ON THE ARREST OF CANCER.

By Weedon Cooke, Esq.

(Read before the Medical Society of London.)

[By the early extirpation of cancerous growths the author considers that the reservoir of the cancerous matter is taken away, and the cancer cells distributed over the whole economy, provoking a greater activity of the disease. Out of 207 cases of operation observed at the Cancer Hospital the disease has returned (taking the average) in fifteen months, and is then more uncontrollable than the original tumour.]

"Experience," says Mr. Cooke, "leads me to the conclusion that there is, in a great number of these tumours, a natural ebb tide. The tumour grows at first rapidly, after a time slowly; it then remains stationary, and at last begins to waste, until gradually it almost disappears. These favourable cases are seen in persons of cheerful temperament. In other persons the progress will be the same, but the termination a spontaneous sloughing out of the whole tumour. Sometimes the wound remaining will fill up and heal, or it will remain a dry scab for years without inconvenience, or a small superficial ulcer will continue to give some inconvenience, which may be relieved and kept in subjection for years by judicious treatment. Taking the climacteric disturbance as the grand exciting cause of the development of cancer, it is only rational to expect, when that disturbance subsides, provided the patient is well supported, and well managed, the mind

relieved of all fear, and the cancer itself neither tattooed with caustics nor excised, that the cause being removed, the effect will have no further serious existence, that, in fact, the active cancerous tumour will become a mere inert fibrous mass, which is, in a great measure, reabsorbed by the neighbouring vessels." Numerous cases were read by the author illustrative of his views, and showing the advantage of constitutional tonic treatment. He then dwelt upon the importance of the inculcation of hope, "that charm for every woe," by both surgeon and friends; "it medicines the body no less than the mind, and should be administered with a full conviction that it is a most valuable therapeutic agent, and not as an amiable delusion." He spoke also of the influence of temperament, and suggested the simple division of "cheerful" and "desponding," instead of the old and more complicated arrangement of Hippocrates. It will invariably be found that whilst a melancholy mind, in which hope cannot be raised, is the surest enemy with which the surgeon has to battle, a cheerful temperament is such an aid to art, that with it a sufferer from cancer will tide over the evil days, and live to the usual period of man's existence. The treatment most relied on was good nourishing diet, with beer or wine; soda to correct the secretions if necessary; bark and hydrochloric acid, or iron as a tonic. Iodine and mercury are positively injurious, and opium should never be resorted to whilst there is any hope of restoring the patient. As a local application, lead, either as a supporting plaster, or as a lotion when there is much activity in the tumour, has a very sedative effect. The carrot poultice cleanses an ulcerated surface admirably, if frequently renewed, whilst the chlorate of potash lotion is the most effective in healing the open wound. These and other simple methods of dealing with the disease, which are all founded upon the principle of restoring, and preserving, and giving support to the vital principle, wasting no time in looking after impossible specifics, will advantageously displace the use of the knife and caustic in the majority of cases, "although," said Mr. Cooke, "I am anxious to state that there are cases—*ex. gr.*, epithelial cancer of the lip and of the extremities, as well as some forms of medullary cancer—in which operation is desirable and beneficial." A letter from Mr. Cooper, consulting surgeon to the Liverpool Infirmary, was quoted, in which he says, "For my own part I confess that I have known few cases—scarce any, where the diagnosis has been unquestionable—in which extirpation has been successful. On the other hand I have seen many cases, not interfered with by the knife, whose lives appeared little, if at all, shortened by the affection." In conclusion, the author affirmed modestly but decidedly, that constitutional treatment was proved, in its results, to be immeasurably superior to operative treatment, so much so, that whereas the disease always returns after operation, and then with an increased impetus, by constitutional measures, which should include moral as well as physical support, and soothing local applications, it is arrested in its destruc-

tive progress, the new blood throws off the vicious habit of the old, no more cancer-cells are laid down. The old disease becomes a mere inert foreign body, which sloughs, and is thrown off from the renovated system, or is gradually carried off with the other *effete* matters of the body. The plague is stayed, and the remainder of life may continue so uninfluenced by the terrible conflict which has been won, that length of days may be attained, and life ultimately ebb out in the calm twilight of evening.—*Lancet, June 5*, 1858, *p.* 562.

9.—*Carcinomatous Growth removed by a Pen and Escharotics.*—Professor Simpson showed, at the meeting of the Medico Chirurgical Society, May 5, 1858, a carcinomatous growth which he had removed by applying to it, with a common pointed goose-quill, a thickish paste, made of commercial sulphuric acid and sulphate of zinc. The paste was taken up like a drop of ink in the pen, and laid in a line along the skin covering the tumour. The caustic immediately whitened and decomposed the external surface of the skin, and the decomposed tissue was scraped through with the point of the pen. By a succession of similar applications and scrapings, the skin and a portion of the underlying cellular tissue was cut through in a very few minutes; and two days afterwards the mass of the exposed tumour was divided and destroyed by the pen and caustic in the same way. If the tumour had been larger, a number of lines of escharotics could be sunk down in this same manner into the basis of the mass. The patient, who had had a tumour removed in England last year from the same spot by the knife, averred the pain of the caustic and pen was by no means great; but the sensitiveness of different patients was very different. After the dead tumour and dead surrounding tissue began to separate, the edges of the wound took on a rapid cicatrising action, and pushed the decomposed mass out in a mushroom-like form. By the time it fell out, there was only a comparatively small circular sore left.—*Edinburgh Medical Journal, July* 1858, *p.* 76.

10.—*Case of Cancerous Tumour Treated by Chloride of Zinc.* By James Alexander, Esq., Wooler.—The following case of cancer does not possess in itself any peculiar interest, and certainly cannot boast of having been successful in its result. But it affords an opportunity of detailing a mode of applying caustic to malignant growths, or indeed to tumours of any kind, when it is deemed advisable to have recourse to its use for their removal, not much known in this country, and which may perhaps be found as effectual as any other, while it is free from various objections on the score of tediousness and uncertainty of operation, as well as prolonged suffering, to which the ordinary methods of applying escharotic remedies are justly liable.

Three months ago a man presented himself to me for advice, with a large carcinomatous growth, occupying nearly the whole of the chin, and considerable part of the under lip. The tumour was beginning to fungate on some points where the skin had given way, and was covered with diseased integument closely adherent to the mass below on the remainder of its surface, and was still moveable, but not freely, on the parts over which it lay. The patient informed me that a small ulcer had been cut out of the lower lip a few weeks before, but the tumour on the chin, which he represented as being then about the size of a small bird's egg, had been unfortunately left. Deep indurations could be felt along the rami of the lower jaw, immoveably united to the bone, and the aspect of the countenance was unhealthy and cachectic. It seemed a most unpromising case to meddle with, and should perhaps have been altogether let alone. But the man was clamorous to be relieved, if possible, from the loathsome incumbrance on the chin, which emitted from the ulcerated parts an abundant and most offensive discharge. His friends were as eager as himself to have recourse to any means that offered the slightest prospect of even temporary alleviation ; for of any ultimate benefit, they were most explicitly warned, there was not the faintest hope. It was therefore resolved to make an attempt to destroy the fungating mass by caustic ; and I have much pleasure in acknowledging my obligations to Mr. Walker (my assistant), for suggesting to me the method of proceeding I am about to describe, which he had very recently seen employed in one of the Parisian hospitals.

Two parts of fine arrow-root were mixed with one part of chloride of zinc ; and while the paste which such a mixture forms was soft, from the addition of a little water, it was rolled out into a thin sheet, and then divided into arrow-shaped pieces of about three inches long, each tapering to a fine point at one extremity, and rather less than a quarter of an inch broad at the other end. After drying, the paste becomes hard, and if the points are fine, the arrows are capable of overcoming a considerable resistance. After putting the patient under chloroform, a series of deep punctures were made round the circumference of the tumour with a narrow bistoury, and one of the arrows forcibly inserted into each immediately after it was made, where it was allowed to remain. In four days the whole growth was completely detached in one very large, black mass. The surface of the sore for a time looked clean and promising; by and by, however, it assumed an unhealthy appearance, and I cannot say that any permanent good resulted from the operation. The benefit derived in this particular case, however, is not the point to which I would solicit the attention of my professional brethren, but the manner of using the caustic, which I believe, though occasionally practised in France, has been little if at all employed in this country. To do it effectually, one or two precautions should be observed, which were suggested by the progress of this case ; and if these are attended to, I am inclined

to think they will secure the complete detachment of the part we wish to separate in half the time which was occupied in this case. The arrows should be introduced in considerable numbers, not more than an inch or three-quarters of an inch asunder; the points from the opposite sides should cross one another in the centre of the morbid growth, and they should be inserted as near the basis of the diseased parts as possible, as nearly as can be accomplished in the line of demarcation between the sound and unsound parts. The pain from this procedure, judging from the above case, was not by any means severe; for the man slept tolerably well the first night after the application of the remedy, and spoke and ate and moved about freely, with little apparent suffering, much less, certainly, than I ever saw when caustic was applied to the surfaoe; and undoubtedly the effect is very expeditiously produced, for the caustic being applied to the root, and not to the surface of the growth, its vitality is at once destroyed, and the separation is completed whenever the integument between the punctures yields to the lateral action of the arrows. I am no advocate for the use of caustic in the treatment of cancer; in common with the vast majority, if not the whole, of the profession, I greatly prefer its removal by the knife. But there may be cases in which the feelings of the patient, or perhaps other circumstances, may compel us to have recourse to it; and when such cases do occur, I venture to submit to the consideration of my professional brethren the mode of proceeding I have now detailed.—*Edin. Medical Journal, August*, 1858, *p.* 114.

11.—*Chlorate of Potash in Cancerous Ulcers.*—At the Royal Free Hospital, Mr. Weedon Cooke is in the habit of employing a lotion to heal up various kinds of ulcers which is worthy of attention. It consists of half an ounce of the chlorate of potash, forty minims of hydrochloric acid, two drachms of the sedative liquor of opium, and a pint of water (twenty ounces). This has been lately used in a very severe case of ulcerated cancer of the lower lip, left side of the face, and left half of the upper lip, in a man aged forty-six, the subject of it these last five years, who had formerly undergone an operation with but temporary benefit, although the disease in him is not hereditary, and who was admitted with this cancer in a horribly foul, swollen condition. When we saw the patient on the last occasion (June 1st), we observed that his general health had much improved by a course of internal medicine of bark and hydrochloric acid. and the lotion had converted a malignant sore into a healthy granulating ulcer, of a clean pink colour, with a disposition to heal up at the margins. The tendency to bleed, which was always present before, had now completely ceased; and we hope that a large portion of this ulcer may eventually cicatrize under the plan of treatment employed.—*Lancet, June* 19, 1858, *p.* 606.

12.—SOME OBSERVATIONS ON THE TREATMENT OF SMALL-POX.

By E. W. T. Mandeville, Esq., Surgeon, 3rd Indian Depôt Battalion, Chatham.

[During the spring of 1858 small-pox was very prevalent in the Chatham garrison, and only one case out of thirty proved fatal under the treatment pursued by the author; although more than half were confluent, and ten were of an aggravated form.]

As this paper is not intended to be an essay on small-pox, I shall merely state the usual steps in the treatment.

As is the custom in all military hospitals, fever cases are immediately admitted when they present themselves; and during the prevalence of the small-pox the first symptoms of any eruption were carefully looked for, and the more especially in the present instance, as both rubeola and scarlatina were also then prevailing; and upon ascertaining that the eruption was small-pox, the patient was removed into the hospital set apart for that disease.

The treatment up to this time was the same as for common continued fever, but I now commenced what may be termed the specific treatment. The patient was directed to take a mixture composed of 2 drachms of compound rhubarb powder, 2 drachms of tincture of hyoscyamus, and $7\frac{1}{2}$ ounces of camphor mixture, in doses of two tablespoonfuls three or four times a day; but if the attendant fever was very high, there were added two ounces of the solution of acetate of ammonia to the above. This mixture was generally continued as long as the fever lasted, which was usually about the time when the pustules had fully maturated and the scabs had formed, the fever seldom extending beyond that period. It was then omitted, and bark ordered, if there had been great prostration, after a serious attack. A draught containing one drachm of tincture of hyoscyamus, in an ounce of camphor mixture, was given at night, as soon as the patient complained of any restlessness or itching, which was about the second or third day of the eruption in the confluent form; but they sometimes complained of it on the first day, when the eruption appeared to be retarded, as if struggling to force its way through the cutis vera. This was continued every night as long as the sleeplessness from the pruritus continued, and at the same time the following liniment or ointment was laid on with a large-sized camel-hair brush three or four times a day over the face and any other part of the body of which the patient complained of being itchy, viz.: half a drachm of extract of belladonna, rubbed up with half a drachm of spermaceti ointment, to which were added $3\frac{1}{2}$ oz. of olive oil and $2\frac{1}{2}$ drachms of chloroform. The cerate was added to give it consistence and hold the chloroform in suspension, but the bottle must, notwithstanding, be well shaken

before using, as the chloroform will subside after standing for any time.

In giving the above as being generally sufficient, I should have said, as the basis of my treatment, I wish it to be distinctly understood that I do not mean it in an empirical sense, as every case of small-pox must be treated according to the individual symptoms, and the practitioner must be prepared to meet every contingency or complication of other organs that may arise, either of the head, chest, or abdomen, and act accordingly; but, as far as I can at present judge, it appears to me that by adopting the above mode of treatment, the tendency to such complication will be much diminished or modified.

I may here say a few words on the rationale of the treatment. The mixture is intended both for the purpose of keeping the bowels free, and reducing the fever and irritation of the skin without depressing the system, as we cannot tell *à priori* what secondary affection may set in, in which the vital powers may be brought to the lowest ebb and require to be sustained by enormous stimulants.

As to the administration of the full doses of hyoscyamus at night, I wish specially to direct attention to it as a curative means in the treatment of small-pox, and I consider that without its aid I should not have had anything like the success which I have had; and there need be no apprehension of giving it even when delirium sets in (the latter being met by appropriate treatment)—the object which I had in view being both for the purpose of procuring sleep, as also of allaying the irritation, and which is gained, I suspect, by its causing the eruption to force its way more kindly through the cutis vera; and this latter effect is also favoured by the external application of the chloroform and belladonna ointment, which I consider a valuable adjunct in the treatment of small-pox. The patients invariably expressed their sense of relief soon after its application, some saying it made the skin pliable; others, that it made it feel cool; others, again, that it made it moist; but all felt it relieve the itching or tingling feel.

One remarkable fact which I have observed since I have commenced using the ointment is, that none of the confluent cases were pitted (with the exception of three cases, and in these very slightly indeed), and we could perceive, after the scabs became detached, the places where the original pustules were had an elevated instead of a depressed base, so that the subsequent absorption left the skin in its normal condition. I should, however, wish that other practitioners would try the ointment, in order to ascertain whether this latter circumstance was accidental or not.—*Dublin Quarterly Journal, August* 1858, *p.* 49.

DISEASES OF THE NERVOUS SYSTEM.

13.—REMARKS ON MYALGIA, OR MUSCULAR PAIN.

By Dr. THOMAS INMAN, Liverpool.

[Muscular pains are frequently mistaken for neuralgic, hysterical, or inflammatory affections. The following case will illustrate this affection :—]

Miss R., aged ten years, of frail make and delicate constitution, yet of very active habits, had an attack of measles, from which she was convalescent about the tenth day. At that time she was allowed to run about as usual out of doors, and to resume her usual lessons. On the second day, a Sunday, when she had been twice to church, and playing in the garden too, she was seized in the evening with acute pain in the side whilst practising a hymn tune and singing. The suffering was so severe that the medical attendant was summoned. He considered the complaint to be pleuritic ; but taking into account the recent recovery from measles and the patient's condition, he contented himself with giving very mild antiphlogistic medicine, and ordering an abstinence from solid food. Next morning the pain was absent. The child ran about as usual, but appeared languid ; and the pain returned in the afternoon with great severity. The same means were continued with the same results ; but on the third or fourth day, the pain was accompanied with well marked feverishness, which lasted till morning. The paroxysms of pain now diminished, but the evening fever became worse and worse, assuming at last the character of infantile remittent (a disease from which she had previously suffered). On the eighth day, some slight râle was heard in the chest, and I was called in consultation on the case. When I saw the child, I found her very pale and languid, almost confined to her mother's knee. The pulse was 130 ; the skin cool ; the tongue clean ; the bowels regular ; and the eye bright. There was full disposition to laugh at a funny remark, but a fear to do it lest the pain should return. I then elicited the preceding history. A careful physical examination of the chest failed in detecting any important sign of disease. I was told that the child had only had two pieces of dry toast in the way of solid food since the illness began ; and that the evening fever was quite as severe as it was when I saw her in the remittent attack. I considered the complaint was simply myalgic ; and it was readily agreed that the treatment should be altered. Egg beaten up with wine and water, jelly, blanc-mange, cream, and bread and milk, or chicken, were to be given, as most convenient, every three hours ; and citrate of iron used as a medicine. Two meals intervened between the visit and the ordinary time for the feverish attack ; and the fever did not return. In two days, I found the patient so much better, that further attendance was unnecessary.

I have met with three other cases of a similar kind. In two, the patients had been "confined" only a day or two. The feverish symptoms were well marked; and peritonitis was suspected at first. In the third, the liver was supposed by the patient to be diseased. In all, a careful consideration of circumstances induced the belief that the complaints were purely myalgic. The treatment was appropriate, and the recovery rapid. As the gentlemen, however, in whose practice they occurred have, I believe, an intention of reporting them individually, I cannot make larger reference to them now.

In the case above related, we have this very remarkable fact, that the fever came on after the use of antiphlogistic remedies and low diet, and increased in severity under that system, while it disappeared at once under the use of more generous diet and stimulants. The same fact was apparent in the other cases to which I have alluded.

An occurrence so striking as this, leads us to consider the subject of fever, and under what circumstances it comes on. We find that it attends extensive inflammations; is common in exanthematous diseases; is present in the early stages of catarrh; it forms the prominent symptom of typhus; under the name of hectic it is generally found in phthisis, hip-joint disease, and others of a similar nature. Prolonged mental exertion will bring on feverishness as well in the adult as the child; and hunger and want will run insensibly into typhus. With the fever there is always a more or less permanent elevation of the temperature of the skin, &c.; there is also a steady diminution of weight as long as the fever remains. Now there is strong ground for the belief that our animal heat is produced and kept up by the slow combustion (*eremacausis*, as Liebig terms it) of our bodies. Assuming this to be true, we can come to no other conclusion than that fever indicates a more than usually rapid combustion of one or more of the organs or tissues of the body; for augmented heat, *cæteris paribus*, must imply increased combustion. In other words, the bodily heat is an indication of the expenditure of bodily fuel. Now, it is tolerably clear that expenditure of fuel may take place under various circumstances. Acute inflammation and chronic, extensive ulceration and suppuration, with defective appetite, will all produce disproportionate waste, and consequent fever. Muscular exertion may do so too. Direct experiment has proved that the heat of a muscle is augmented one degree of Fahrenheit whenever it contracts. Experience tells us that continuous contraction expends the material; it tells us, too, that nothing heats or warms us so completely as active exercise; *i.e.*, brisk and continued muscular exertion. It also tells us that nothing exhausts us more than long continued bodily labour without adequate nourishment.

Muscular exertion, then, implying a great expenditure of fuel, let us inquire whether it can produce feverishness. If we turn to books, we find Dr. C. J. B. Williams, in his 'Principles of Medicine,' remarking: "Hence the low typhoid or adynamic fever which sometimes fol-

lows prolonged fatigue." "A serious part of such disturbance is the sleeplessness, which, after extreme fatigue, brings the patient into a state nearly resembling delirium tremens." "In these conditions, diffusible stimulants are the best narcotics." If we turn to our personal experience, we can remember many instances in which a feverish night has followed a day of unusual fatigue—how, whenever we have pedestrianised so long that we have had no appetite for food at our journey's end, we have been tormented at night by dry hot skin, thirst, troubled sleep, and half delirious dreams. We have ourselves seen cases of intense fever ending in phthisis produced by a race for a wager; and Dr. Williams states that the worst cases of pneumonia he has witnessed have been in boys at school after excessive exertion at foot-ball or other play. We next turn to the experience gained in lying-in hospitals, in which a large proportion of patients necessarily have a vast amount of labour without a corresponding amount of food. (The amount of physical exertion put forth by the voluntary muscles during a long confinement, is far greater than that undergone by any man employed in ordinary work. Men know nothing equal to it, except it be the prolonged labour at the oar or the pumps at sea.) We find Dr. Churchill remarking upon ephemeral fever: "that females are especially liable to it during the early part of their convalescence." Amongst the causes, he enumerates "the impression of cold, perhaps, on rising from bed or changing the room." (These causes imply muscular exertion on the part of the patient; and in one of the cases which has come under my notice, the attack was distinctly determined by the patient dressing, sitting up, and nursing her baby, the day after her confinement.) "Fatigue, mental agitation, and want of rest," are further enumerated amongst the causes of the complaint; and amongst the symptoms are palpitation, headache, pain in the back and limbs, soreness of the skin, rapid and irregular pulse, &c. Those who have done me the honour to read my previous communications, will recognise in these symptoms the characteristics of myalgia; and muscular pain implies muscular exertion disproportionate to the patient's strength.

To these observations it will be answered, that hundreds and thousands of cases occur in which there is excessive muscular exertion without feverish symptoms following. The fact is undeniable; but the objection is not valid. We do not the less attribute tetanus to a wound, because millions who are wounded never have lock-jaw; nor do we the less attribute our soreness to unusual fatigue because our companion who went through the same work feels no such result. If it be a positive fact that feverishness does follow in some instances, and really depends upon great muscular exertion, that fact is not vitiated by the remark that no feverishness follows in other instances. In all the cases that have come to my knowledge, however, the muscular exertion has been superadded to other causes of debility, loss of blood, privation of food, antiphlogistic medicines, &c.; and it is proba-

ble that the feverishness depends upon the muscular exertion being vastly disproportionate to the patient's strength at the time. I conclude, then, that the following propositions are not far removed from truth :—

1. Feverish symptoms do sometimes attend myalgia or muscular pain.

2. Fever is not necessarily an indication of the presence of inflammation.

3. It does not always require antiphlogistic remedies.

4. It indicates an increased expenditure of animal fuel.

5. It is frequently relieved or cured by stimulants, tonics, generous diet, &c.

6. Pain, soreness of the skin, and tenderness on pressure, even though attended with well marked feverish symptoms, are as often due to a myalgic as to an inflammatory cause.—*British Med. Journal, May* 22, 1858, *p.* 407.

14.—TREATMENT OF NEURALGIC PAINS BY NARCOTIC INJECTIONS.

By Dr. Alexander Wood, Edinburgh.

[M. Valleix, in 1841, published a work throwing great light on the pathology of neuralgia.]

That gentleman pointed out the fact, which seemed to have escaped the notice of all previous observers, that the superficial nerves are the ones most commonly affected; and not only so, but that there are certain points in the course of each nerve which are more liable to be affected by pain than the rest of the nerve; and that these points are precisely those where the nerves approach the surface of the body. M. Valleix has noticed four points in the course of every nerve that are liable to be affected by neuralgia, and where the neuralgic pain is more apt to occur than in the other points. The first of these is the point where the nerve emerges from the bony canal through which it passes; the second, the point where the nerve traverses the muscles to ramify in the integuments; the third, the points where the terminal branches of a nerve expand in the integuments; and the fourth, where nervous trunks become superficial during their course. This writer has gone most carefully over the entire nerves of the body; and has shown the various points not only generally in reference to the whole nervous system, but has also, in detail, indicated each particular spot where we may expect the pain to be seated, according to the particular nerve affected. That is the first matter I should like to impress on those who take an interest in the subject. It is of importance to note, that the value of this information is that it enables us to find the place, often very limited in extent, where the tenderness on pressure indicates the pro-

priety of local applications; and also, that from the nerve being superficial, there it is, of course, more within the reach of remedies applied externally.

There is another great fact which M. Valleix has shown; and that is, that while the pain in neuralgia is most generally intermittent, the unfortunate patients attacked by it are subject to have paroxysmal attacks; and, while there is thus a difficulty in applying your remedy during the attack, you can at any moment, even during the intervals of the pain, awaken it by pressing firmly on those points in the nerve I have indicated. Let me give an example. A patient complains, let us say, of a pain in his brow. The pain, he says, is often severe: it comes on, perhaps, after he goes to bed at night; but at this moment he does not feel any pain, and therefore he fears that you can be of no use to him. Well, seat him in a chair, place his head back, and take a coin—a shilling will do very well—and press with the edge of it along the ridge of the forehead, and immediately it comes to the point where the nerve emerges the patient will scream out. I have seen and tested this so often that I can confidently state that it is a case likely to occur often in practice. Or, perhaps, to take another instance: a patient is labouring under sciatica. In that case press firmly near the posterior edge of the trochanter major, or near the superior spinous process of the ilium, or at the upper part of the ischiatic notch, and, in all probability, not only will the point so pressed on exhibit tenderness, but a distinct pain proceeding down the limb will be produced.

A very interesting class of cases is that of young women who suffer from pains about the mammary region and the intercostal spaces. These are very often mistaken for *pleuritis*, and are treated with leeches when there is no necessity for them. If you take a patient suffering from such pains (which are very often accompanied with menstrual irregularities), and press on the outside of the spinous processes of the vertebræ, or along the lower margin of the rib, you will very quickly awaken the pain, which is quite a sufficient test of the fact that it is neuralgic pain, and not pain produced by inflammatory action: and that fact being so ascertained, by the use of the little instrument I have to speak of, the pain is at once abated, and, in many cases, entirely cured.

Another seat of pains which may be treated with this instrument, is the abdominal parietes. There are two parts where I have found the pain to occur very frequently: one is over the region of the liver; and I am satisfied that the existence of neuralgia in that situation explains many of those cases of supposed liver-disease, in which we cannot detect any enlargement or any apparent organic disease of that viscus. The needle introduced under the abdominal parietes (of course taking great care not to wound the peritoneum), and a narcotic injection thrown in through it, will almost instantly relieve the pain. Another class of cases are pains about the groin, or about the belly

where it comes down on the groin. We very frequently find the pains in that situation; and females suffering from them have very often been treated, by mistake, for uterine disease when there was nothing of the kind. In several cases which have come under my own observation, the speculum has been forcibly introduced into the virgin vagina when the patient was suffering from nothing but neuralgia of the abdominal parietes; caustic has been employed, and the most severe treatment adopted, when the little instrument I will soon describe to you would have almost immediately relieved the pain.

But the variety of neuralgia in which of all others I can predicate an immediate and marked success, is the trifacial neuralgia, and especially that species of it where the tender point is found at the supra-orbital foramen. The extent of surface affected here is often very limited; indeed, I have sometimes only succeeded in detecting it by pressing the point of a patent pencil-case into the foramen. When once it is discovered, however, the injection may be freely thrown into the foramen; and although in this situation the pain of the application is severe, yet the result is usually a speedy and most successful cure. Sometimes you will find the painful spot at the upper part of the side of the nose, where the infratrochlear nerve emerges from the orbit. Here also the needle may be freely used. By the use of the injection in one or other or both of these places, the severe pain in the eyeball, so often complained of, is at once cured.

I have previously stated how I was led to use this remedy. I had studied the book of M. Valleix with great interest soon after its publication, and found the plan of treatment which he recommends, viz., the application of several blisters over the tender points of the nerves, not nearly so successful as he led me to expect, or as it might otherwise be thought to be. I then varied the application very much. I raised the blister, removed the cuticle, and applied morphia (both in a liquid form and as powder in ointments) on the surface, and found, contrary to the experience of Valleix, that the patient derived decided benefit from it. One remarkable case, many years ago, I cured by applying nux vomica to the blistered surface; but I never tried it again, for it seemed likely to kill two people: my patient, an old lady, who nearly died of the poison; and myself, then a young doctor, nearly died of the fright. The application had a most remarkable effect, however, in curing the disease. The old lady lived for many years afterwards, and died of a different complaint altogether. Another method of treating such cases was to scarify the part and rub in morphia; but that was so brutal a method that you will not wonder that it was soon abandoned.

Then came about a new method of treating aneurism, by introducing the acid solution of perchloride of iron. One day I happened to be using the ingenious instrument constructed by Mr. Ferguson of Giltspur-street, for the purpose of introducing the preparation into a

nævus on the head of a child, when it occurred to me that this was the very instrument I had been so long looking for, and the very thing for introducing narcotic injections in cases of neuralgia. I was not long in having an opportunity of testing its suitability. It was in the end of November, 1843, that I was sent for to see an old lady, upwards of 80 years of age, who had been kept from sleep for four or five days by a most violent attack of cervico-brachial neuralgia. This lady was an old patient of mine, and I knew she could not bear opium administered by the mouth in any form. We are too apt, I think, when we hear of these idiosyncrasies, to believe that they are mere imagination. In the case of this old lady, Dr. Davidson had seen her many years before, and treating her inability to take opium as a mere freak of the imagination, gave her twenty drops of laudanum. She had hardly taken the dose when she fell on the floor in a fainting fit, so that I knew there was no hope of getting her to take any opiate to procure sleep. I had a solution made of morphia in sherry wine, because I thought it would not irritate and smart so much as alcohol, and because it would not rust the instrument as a water solution of opium would do. I then introduced the needle into the tender part within the angle formed by the clavicle and acromion. In about five minutes the patient's eyes became injected, and looked just like the eyes of a drunken person, and she complained that her head was in a confused state. She soon afterwards fell asleep. The operation was performed about ten o'clock that night; and on calling next morning at eight o'clock, I was somewhat alarmed to find she had never awakened. She was very soon roused, however; but I determined never to use so much as thirty drops of solution of morphia (equal to the amount I had given her) in the case of a person at her time of life, unless I had previously tested its effect upon the system. This treatment quite cured the old lady of the neuralgic pains, which never returned.

In Edinburgh, I may mention, the use of this instrument has become nearly universal, and the efficacy of the process is well known. I could narrate a vast number of cases in which it has proved eminently successful; but as details would be burdensome, I will only detain you with the mention of one or two.

A lady, troubled with neuralgic pains, had been punctured upwards of one hundred times, always in different places; but no sooner had the pain been driven from one spot, than it took up its seat in another. At last, I had expelled it from every part of the body, except a corner of the head, and there I was puzzled how to deal with it. The fact was, I could detect no painful point in the scalp. I would impress upon you that the instrument is not to be put into the place where the patient complains of the pain, but into the spot where you find you can awaken the pain upon pressure. Well, I could find no pain by pressing upon any part. The lady's husband, a medical man, took her to the German baths, in the hope that they might furnish what

was wanting to the cure. She resided there for several months, but without the slightest benefit; and at length her husband brought her back to me, saying, he was satisfied unless I could cure her nobody else could. I twice examined the part of her head affected; once more, the second time, I succeeded in finding out the point where the needle should be inserted; introduced the instrument; and from that day she has never had a touch of neuralgia again, though she has suffered from rheumatic gout.

Another lady, also the wife of a medical man (and I take these cases, because on that account I am better able to get at the symptoms), was suffering from very intense neuralgia in the forehead, which had lasted, at irregular intervals, for ten days. The pain was so severe that it rendered her completely useless. I at once inserted the needle; the pain became instantly relieved, and soon left entirely. Since then it has never returned.

The question may be asked, But how does this process act? I do not think I am bound to answer that question. It would be a sad puzzle to many of us, I suspect, if we were asked how many other remedies which we use, act. We know the effect they produce; but often we are unable to tell why it is so. But I think there are various considerations which may help us to a conclusion on this question. One of these is, that we know that every disease has both a local and a general effect; and we know, also, that the local effect depends very much on the affinity between the particular medicine administered and the tissues to which it is applied.

I believe the remedy I have been speaking of acts in two ways. First, the injection into the cellular tissue in the neighbourhood of the nerve, the needle being charged with narcotic solution, affects the nerve. In the second place, I believe it acts by being passed into a part which rapidly absorbs the medicine, and sends it through the system, thus producing an almost instantaneous effect. In this little instrument we possess the means of bringing the patient almost directly under the influence of opium. It is truly astonishing to see how rapidly it affects the system. If you throw in a large quantity, you will see the eyes immediately injected, and the patient narcotised; and, in a few minutes afterwards, you will see him in a profound sleep.

One objection which may be brought against this process is the gastric disturbance it produces, bringing on a condition very similar to that caused by sea-sickness. Nepenthe, however, does not seem to produce so much sickness as opium, and is therefore preferable as an injection. Another risk connected with this remedy, and which requires to be avoided with great caution, is that, in the case of elderly people, the injection is apt to take a very strong effect. I have more than once been much frightened by the effect it produces on people advanced in life; though, I am thankful to say, I have never been nearer producing fatal results than in the case I mentioned to you. Another caution I would offer is, that you must choose the proper

patient for the use of the remedy. A great many persons reading accounts of the process have run rway with the idea that it can cure almost every possible pain in the human body. Lately, a lady, about 30 years of age, of an unhealthy constitution, came to me from the south of England to be cured of neuralgia. On examining her, I thought I could detect, from the appearance of her eye, the existence of fungus hæmatodes of the optic nerve; and sent her to an eminent oculist, who confirmed my opinion. Some time ago, an English nobleman came here to consult me about neuralgic pains with which he was affected. He had been much relieved by a person whom I had instructed in the use of the instrument, and came to me to be cured. From examining him, I found there was every reason to believe that there was some internal tumour pressing on the nerve, which created the neuralgia, and prevented its cure; and that tumour we could not remove. The pain he had to endure was of the most agonising kind; I never saw any one bear pain with such resolution as he did; but I have seen him writhing in agony, have seen him at once relieved with the instrument, and immediately afterwards able to take a long walk. But, of course, so long as the tumour was there, the relief could only be temporary.

The instrument is of the simplest construction, and is a modification of Mr. Ferguson's already alluded to. It consists of a small glass syringe graduated like a drop measure, and to this is attached a small needle, hollow, and having an aperture near the point like the sting of a wasp. The painful point being ascertained, the syringe, being charged, is pressed firmly in to such a depth as to reach the nerve, when the piston being shoved home, the charge is delivered. No hemorrhage follows; and, in the many cases in which I have operated, I have never seen any disagreeable local effects, except a slight blush of urticaria round the wound.—*Brit. Med. Journal, Aug.* 28, 1858, *p.* 721.

15.—ON NARCOTIC INJECTIONS IN NEURALGIA.

By Charles Hunter, Esq., House Surgeon to St. George's Hospital.

In the two following cases of neuralgia, the local treatment, by narcotic injection into the part, proposed some years ago by Dr. A. Wood, has been employed. Having briefly enumerated them, I propose to point out what I consider the advantages or otherwise of this mode of treatment.

Case 1.—J. G., aged 55, was admitted into St. George's Hospital July 21, under Dr. Pitman, with tic douloureux. He had been constantly subject to it for four years, with but little intermission: at one time, he obtained for a few weeks from seven to eight hours sleep at night, but with that exception he used always to be in pain day and night, and seldom slept an hour without a violent paroxysm.

On admission he was suffering these repeated violent attacks of pain

all over the left side of the face, which extremely and almost constantly distorted him, and caused him day and night to keep up a cry of anguish. Various remedies to palliate the pain were attempted, but unsuccessfully till the 7th of August, when the local injection of morphia was commenced, About one grain and one-third of the acetate of morphia was injected at 8 p.m.: the man fell asleep very soon after, and continued to sleep for seven hours. During the next few nights the same dose was regularly injected, and he slept either all night or for several hours.

On the 11th, he was asleep when visited, so no morphia was injected; he, however, slept but two hours; the next few nights the injection was not given; he slept either not at all, or most indifferently.

16th. A larger dose was injected into the cheek from within the mouth; he went off to sleep at once, and did not awake all night; he was also easy the whole of the next day: after this the original dose was continued, but now night and morning.

20th. He sleeps a good deal; has good nights, and two or three hours' sleep in the day. The paroxysms are now so slight, that often no one except the patient can tell when they are on; no continued pain is felt, and the paroxysms are "sometimes off for half a-day, often for several hours."

30th. Up till to-day the morphia has been injected night and morning; but, for the present the administration is left off on account of a considerable-sized abscess which has been gradually forming the last few days, and which was opened to-day.

The part injected was the gum over a back upper tooth, as that was the most painful part, and the spot which, if touched, always brought on a paroxysm; latterly, the adjacent tissue of the cheek was injected close to the gum.

Thus, not only was sleep procured, but the patient obtained considerable ease during the day while the injection was gone on with. The constant recurrence of the attack of pain was put an end to, and the paroxysms when they did occur were far milder; but a large abscess formed in the cheek.

Case 2.—E. P., aged 18, was admitted into St. George's Hospital July 25, under Mr. Tatum, suffering from excessive neuralgia in the right eye, which was also extensively diseased. As there were no hopes of saving the eye, and the pain was constant, the globe was removed for fear the other eye should also suffer: unfortunately it did, and ran a most rapid course—the lids becoming swollen, hard, thick, and everted: the neuralgia in this eye became even worse than it had been in the other.

All kinds of remedies were tried—aconite, morphia, hyoscyamus, opium, quina, &c., all failed to give relief; chloroform was then used and frequently, but it only gave her ease and sleep for a few minutes, or at the most an hour or so.

Sept. 9. $\frac{3}{4}$ gr. of morphia (the acetate) was injected under chloroform into the eyelid, but produced no sleep, as sickness (which had commenced in the afternoon after a dose of morphia by the stomach) continued during the night.

10th. No morphia given by the stomach, $1\frac{1}{3}$ gr. injected under chloroform into the eyelid; she went off to sleep for seven hours continuously, which she had not done for some months. She slept once or twice the next day without chloroform.

11th. Injection repeated 10 p.m.; a part escaped; she slept four hours; had acute paroxysms between the periods of sleep.

12th. Sleep produced by the injection, and the severity of the paroxysms much diminished.

In the next few days the morphia was injected, and gave ease and sleep in proportion to the amount injected; from this time no chloroform was employed while inserting the point of the syringe in the skin.

16th. Slept four hours last night. The pain now is nothing to be compared to what it previously was, the swelling is going from the eye. In the evening nearly three grains of morphia were injected; sleep was immediately produced, and continued eight hours. The next day she was far quieter and easier, and appeared so comfortable at night that no morphia was injected.

18th. No morphia having been injected, no sleep was obtained last night, although a six-hour dose (gr. i.) was continued to be administered by the stomach.

19th. $1\frac{1}{3}$ gr. injected into the eyebrow, gave sleep for several hours at night and a little in the day; at night two grains were given by the stomach; it gave no sleep, but after an hour or so it caused considerable sickness.

October 4. The morphia injection is still continued, and with considerable relief to the patient.

Remarks.—In this patient, then, it appears,

1. That a very great change has been made for the better, the progress of the affection appears arrested; or, at all events, for the present kept at bay; the health of the patient is improved.

2. That the local affection appears so far improved that all the hardness, thickness and eversion of the conjunctiva have subsided; the pain in the head is very much less, the pain in the eye is far less acute, and the attacks much less frequent, so that sleep is every now and then obtained during the day without medicine.

3. But it must be observed that this girl, like the man, has had abscess as a result of the local injection: the eyelid, the eyebrow, and the side of the eye, have all been opened for the liberation of matter.

4. It is very interesting to observe, that in this girl the injection of morphia into the cellular tissue was most effectual; but that morphia given by the stomach was of no benefit at all, but always did harm; that general irritation to the nervous system was produced;

that sleep hardly ever followed, and was then probably accidental because so seldom, but that sickness, nausea, giddness &c. almost always accompanied its administration by the stomach, whatever the strength of the dose happened to be.

In considering the results of the trial of the local treatment in the two cases, the advantages obtained appear to me to be,—

1. That much less constitutional (nervous) irritation attends the local introduction of the narcotic than when it is given by the stomach.

2. That the effect of the narcotic is more immediately produced.

3. The action of the narcotic appears more sure when injected. The exact amount taken into circulation can be more readily seen, and the risk of contamination or alteration which it is exposed to, given by the stomach, is avoided.

4. It appears to exert more benefit on the local affection when it has to be absorbed from the part affected itself, probably from being brought more directly into contact with the nerves involved in the disease.

On the other hand there are the disadvantages; these are chiefly,—

1. The pain occasioned by the introduction of the fine canula.

2. The chance of the fluid escaping from the wound or puncture.

3. The production of local inflammation, effusion of blood, abscess.

To conclude: are the disadvantages of such import that they ought to preclude the local employment of narcotics by injection? do the advantages preponderate over them? I think they do; and that the disadvantages are only those which, with care and experience, may either be avoided, or much diminished; for instance,—1. By employing such a syringe as that used for the perchloride of iron (to inject aneurisms, &c.), with a very fine point to the nozzle, the pain is not more than that occasioned by the prick of a needle. 2. By having the injecting tube no larger than that of such fine syringes, the puncture in the integument is so small that the fluid does not escape. 3. With regard to the formation of abscess; it is only, for the most part, after repeated injections have been made in one place that such happens. One great thing then to avoid it is, to vary as much as possible the exact site to be injected, still injecting in the painful part, or to cease injecting for a time. The necessarily acid state of the solution of the morphia (for it must be strong), is certainly another disadvantage; but as irritation to the integument appears produced, as little acid as possible ought to be employed, and any excess in the solution neutralised by potash. These inconveniences being obviated as much as possible by the means pointed out, I think such advantages as the more rapid introduction of the remedy into the system, the avoidance of constitutional (especially nervous) irritation, the greater certainty of the effect, and the more concentrated effect of the remedy on the painful part ought not to hinder the local treatment of neuralgia from having a fair trial.—*Med. Times and Gazette, Oct.* 16, 1858, *p.* 408.

16.—*Neuralgia Successfully Treated by Subcutaneous Anodyne Injection.* By W. M. G. Burns, Esq., Ayr—[The following is an interesting case of neuralgia treated by subcutaneous anodyne injection:]

The patient, Mrs.—, married, aged about 38 years, had being suffering for years with severe attacks from neuralgia. I was called to her in the month of June last, found her suffering from her old complaint in an aggravated form above the right eye, extending over the temporal region of same side. I had exhausted all the ordinary remedies employed in such cases, when I observed in your journal a notice of the cases successfully treated by Dr. A. Wood, of Edinburgh. I had at one recourse to his method of treatment, by subcutaneous injection. The injection was composed of equal parts of the tinctures of opium and hyoscyamus. The result was all that could have been wished for. The patient enjoyed a refreshing night's sleep after the operation. Till now she has been free from neuralgic pains.—*Med. Times and Gazette, Oct.* 16, 1858, *p.* 409.

17.—ON THE USE OF HYDROCHLORATE OF AMMONIA IN NEURALGIA.

By Horatio C. Brenchley, Esq., Surgeon to the Brighton Dispensary.

[This remedy, except in India, has been very rarely employed internally in this country. The following case illustrative of its use in neuralgia is related:—]

A young man, aged twenty-three, unmarried, healthy, and without any other apparent complaint, had long suffered from very severe attacks of neuralgia of the face, coming on at intervals of about one month, and lasting from two or three days to a week. It sometimes came on on one side of the face, and at other times on the other side. During one of these attacks I saw him, and ordered him quinine and arsenic, which put an end to the attack for the time. After the lapse of a month or six weeks, he had a second attack, which was cured in the same way. A third attack, however, came on after a shorter interval. This time the quinine and arsenic failed to relieve him. On the third day, when I saw him, he was in great agony, propped up in bed, and unable to do anything from the severity of the pain. The left side of his face was swollen, flushed, and hot, the temperature considerably higher than on the right side; the heat also of the inside of the mouth was so great, that I expected I should find matter forming from decayed teeth; but, on examination, I failed to do so.

I now tried the much-vaunted remedy—the valerianate of ammonia, but without any effect. The usual remedies having failed, I gave him the hydrochlorate of ammonia, in doses of half a drachm, every hour, in camphor-mixture. I saw him three hours after he had commenced this treatment, and found he had been much relieved after taking the second dose; and having taken the third dose, he was almost free from pain, and begged to be allowed to continue the remedy. The heat and flushing of the face had subsided, and the temperature of

the mouth considerably reduced, feeling quite cool after the burning heat of its former state. He went on for three or four days with the remedy, in doses of fifteen grains, three times a day, although there was no return of pain. Three months have now elapsed, and he has had no relapse.

The *modus operandi* of this medicine is not very clear; but whatever other specific virtues it possesses for the cure of neuralgia, in this particular case it evidently acted as an indirect sedative, by lessening the arterial action; for the first and most striking effect of the medicine was the rapid lowering of the temperature of the mouth and face. From further observation, I have found that this remedy is most useful in those cases of neuralgia which are attended with heat and swelling.

From what I have seen of its action, I shall, for the future, always feel that we have, in the hydrochlorate of ammonia, an addition to our list of remedies for neuralgia which is most useful, safe, and efficient.—*Lancet, Oct.* 16, 1858, *p.* 396.

18.—*Muriate of Ammonia in Neuralgia.*—Some of the preparations of ammonia have long been in use in France, Germany, and elsewhere, as remedies in various nervous affections, with variable success. At the Salpêtrière and the Bicêtre hospitals in Paris, the valerianate of ammonia has been much used in epilepsy for years, in the formula of three parts of valerianic acid, two parts of alcoholic extract of valerian, water ninety-five parts, and sesquicarbonate of ammonia in sufficient quantity to neutralize the acid. The dose is a drachm three times a day. Latterly, the muriate of ammonia has been brought forward on the authority of the Germans, as valuable in neuralgia, especially of the face, and we have recently had the opportunity of seeing it tried in a favourable case, at Guy's Hospital, under the care of Dr. Wilks, and, so far, with some benefit. The patient is a man aged fifty-five, who has been subject to facial neuralgia of the left side for the last four or five years, during which period he has undergone various modes of relief ineffectually. He was put upon half a drachm of the muriate, in water, every six hours, and although he has been more than a week under this treatment, he is certainly much relieved, the pain having diminished. Even supposing that this man is cured, a more extended trial of the agent is required to warrant the eulogium passed upon it by the Germans. In certain forms of chronic diarrhœa it is really a valuable agent.—*Lancet, Oct.* 2, 1858, *p.* 351.

19.—ON THE TREATMENT OF NEURALGIA BY ELECTRICITY.

By Dr. J. Althaus.

From the time when Sarlandiere and Magendie first made known their observations on the therapeutical use of electro-puncture, galvanism has been frequently and in various ways administered to relieve

such neuralgic pains as defy other therapeutical proceedings. The practice of electro-puncture being connected with more or less annoying inconveniences, viz., in many instances very violent pain during the operation, and afterwards inflammation and suppuration in those tissues into which the needles have been thrust, other modes of applying galvanism have been naturally resorted to. Duchenne recommended to produce a strong revulsion by practising Faradisation of the skin, by means of metallic brushes conveying a very powerful electro-magnetic current to the painful points; but the pain produced by this proceeding is, according to Duchenne himself, atrocious, and in a certain number of cases the operation has not been accompanied with any success. Another, and, in my opinion, the better way, is to send an induced current, of middling intensity, for a certain time through the affected nerve, by means of moistened conductors; one pole being placed at a point where the trunk of the nerve may be reached nearest to the nervous centres, the other one on any of the terminal branches of the nerve. This mode of electro-magnetic treatment, which is derived from the physiological fact that by such a proceeding any nerve in its normal state may be made more or less insensible, I have found the least inconvenient and the most efficacious for some forms of neuralgia. In fact, the pain produced by it is very insignificant, and hardly worth mentioning, when compared to the often excruciating neuralgic pain against which the proceeding is instituted. On the other hand, I have seen the method alluded to answering in cases where both electro-puncture and Faradisation of the skin had been resorted to with little or no success. From a number of patients I have treated for neuralgia, two cases are subjoined to illustrate the therapeutical proceeding.

1. *Case of Tic-Douloureux.*—Mrs. O. N., aged 28, has been in good health until May, 1857, when, in consequence of having been wet through, she was seized by violent pains in the right side of her face, first accompanied with fever and general indisposition. The latter symptoms soon subsided, but not the very violent shooting pain, which came on in paroxysms, at the end of which the patient was completely exhausted, so as to be in a state of alarming prostration. For the first few weeks the paroxysms came on very irregularly, and four to five in the course of the day; but, after some time, a very curious intermittent character was to be remarked, as only one paroxysm came on every other day, between four and five o'clock in the afternoon. Large doses of quinine and arsenic had been given, but without producing the anticipated effect; besides the patient has been treated by calomel, sublimate, iodide of potassium, and blisters. Her general health has much suffered; she has become nervous and irritable. When I first saw her (Oct. 9, 1857), the present state was as follows:—There are always premonitory symptoms which announce the approaching

paroxysm, viz., a sort of tickling in the epigastrium, followed by formication in the face. Then the pain begins, and in a very violent way; it is chiefly felt on the zygomatic bone, beneath the lower eyelid, in the cheek and chin, a little less on the nape of the neck, but not in the forehead and the temple. The paroxysm lasts usually about half an hour, is exceedingly violent, and slowly subsides into a dull pain, which persists for three or four hours. The second day is quite free, the third again marked by a paroxysm. On examination of the face, I found two of Valleix's painful points, viz., one on the zygomatic bone, where the temporomalar, and another one on the infraorbita foramen, where the infraorbitar nerve emerges from the orbit: pressure on these two points excited a distinct painful sensation in the free interval. I therefore thought it well to place the poles alternately on these two points, by means of moistened conductors, conveying a rapidly-interrupted induced current to the suffering nerves. The first application (October 10, 1857), done at the time when the paroxysm was just beginning, alleviated, according to the patient, the severity of the pain, but did not shorten the duration of the paroxysm. On the 12th of October, another paroxysm came on at due time, and was then positively shortened by electro-magnetism. On the 14th, premonitory symptoms, as usual, but no paroxysm. On the 16th a paroxysm came on, which was subdued in five minutes. Five other electro-magnetic séances were held, the last paroxysm having been on the 26th of October. I saw the patient in the beginning of June, 1858, when she told me that she had not been troubled any more since.

2. *Case of Sciatica.*—John F. T., Esq., aged 35, from Edinburgh, has never been in strong health, and suffered for a long time from acidity in the stomach. Eight years ago he had his left thigh amputated for tumor albus: he carries now an artificial leg, which, being very heavy, exerts a great strain upon the left side of the pelvis. Three years ago he first began to feel pain on the back of the right thigh, and on the inside of the leg, down to the ankle. The pain having been dull and heavy for some time, soon became keen and acute, so that the patient was laid up by it. He thought it was brought on by his having taken too much exercise. He did not suffer from violent paroxysms of pain, followed by free intervals, but was permanently troubled. He placed himself under the care of two of the most eminent practitioners at Edinburgh, and after some time got much relieved, the acuteness of the pain slowly but gradually subsiding. He then left Edinburgh, and being always much troubled, he had electro-puncture practised upon him by a country surgeon, needles being thrust into the sciatic nerve. By this proceeding he got immediate relief, but the pain never entirely left him, and was pretty much the same some time after the operation. About two years afterwards he came up to town, and consulted Sir

James Clark, who kindly sent him to me. When I first saw the patient, he complained of a dull pain in the calf of the leg, thence going down to the ankle; the thigh being at that time free from pain. When the patient tries to walk, even for a short distance—say half a mile—the pain is much increased, and is usually very bad in the first part of the night. Strong pressure has no marked influence upon the pain, but it rather relieves than aggravates it. Besides, the patient states that early in the morning there are usually lively cramps going on in the muscles of the leg, which, however, generally subside in the course of the day; as they are not accompanied with any unpleasant sensations, he rather regards them as a curiosity than as an object to be complained of. As electro-puncture had already had a fair trial, I thought it well to try Duchenne's proceeding of Faradisation of the skin, and made use of a powerful current, which I applied by metallic wires to the painful points. Two such applications, however, produced positively not the least effect. I therefore sent, in the third séance, a very rapidly-interrupted induced current of middling intensity through the sciatic nerve, placing the positive pole near the tuberosity of the ischium, the negative one near the ankle. Moistened conductors were kept in close contact to the skin, on the points mentioned, for six minutes; and when I interrupted the application the pain was gone and the patient left me free from any unpleasant sensation. When he called again on the following day, he told me that the pain had come back about three hours after the sitting, but by no means so severe as it had been before, and that he had enjoyed a very quiet sleep that night. I operated upon him three times more in the same way as above, when he was obliged to leave town. After the second séance the patient had been free from pain up to the following morning, and after the fourth he only felt it trifling when walking. Six weeks afterwards I received a note from the patient, stating that his limb was always a good deal better than before; he was, however, not totally free from pain when he walked to any distance; yet the pain went off sooner, was less severe, and not so liable to return as formerly. I, therefore, advised him to come up to town once more, if convenient, to have another course of electro-magnetic séances. This the patient did some time afterwards. I operated upon him six times more, as above, and with such a beneficial effect that the patient considers himself now cured, being no more troubled, even when walking for a considerable distance, as three to four miles. I will not forget to mention that the cramps, which used to come on early in the morning in the muscles of the leg, were not done away with by the electric treatment; but as the patient never felt them in any way unpleasant, being scarcely aware of them but by looking to his limb, he did not care for it.—*Med. Times and Gazette, August* 14, 1858, *p.* 166.

20.—CLINICAL ILLUSTRATIONS OF THE PATHOLOGY AND TREATMENT OF DELIRIUM TREMENS.

By Dr. Thomas Laycock, Professor of the Practice of Medicine and of Clinical Medicine, and Lecturer on Medical Psychology in the University of Edinburgh.

[The experience of the author has convinced him of the dangers attendant on the routine use of narcotics in delirium tremens: he has never witnessed a fatal case in which they had not been administered. During the last summer twenty-eight cases were treated by Dr. Laycock without opium or stimulants, and all recovered rapidly. Before detailing the method of treatment followed, a few remarks are made as to the causes and symptoms of the disease.]

Delirium tremens is usually understood to be a disease consequent upon the sottish or excessive use of alcoholic or fermented drinks, and characterised by tremors of the limbs, disordered intelligence, hallucinations, and sleeplessness. These leading symptoms may supervene upon other causes, as starvation, fever-poisons in the blood, wounds, epileptic attacks, albuminuria; but in these cases the delirium has another name; or opium, Indian hemp, tobacco, &c., may in rare instances induce them.

But, it is only a few of those who drink hard that have delirium tremens at all; while those drunkards who have it are subject to it paroxysmally, or suffer only occasionally under certain conditions. It is of primary importance, therefore, to determine what those conditions are. Now, as the disease is one of cerebral disorder, we may conclude that they have reference, 1, to the condition of the brain or of its vessels; 2, to the condition of the blood circulating therein; 3, to the condition of important viscera in close relation with morbid conditions of the blood or of the brain. Under these three heads may be classed, as follows, the more important of the predisposing and exciting causes of the disease, *i.e.*, the *conditions* necessary to an attack:—1. *Conditions of the brain or of its vessels.*—(*a.*) Habitual stimulation from any cause, whether it be (1.) more materially and mechanically by drugs, as spirits, wine, malt liquor (with its constituent adulterating drugs), or opium, ether, &c.; or (2.) psychically, as from over-thought, over-work mentally, continued anxiety, strong emotions, sexual indulgence. (*b.*) Constitutional predisposition to irregular cerebral action, known as the nervous temperament, and characterised by a predisposition to "nervousness," insanity, epilepsy and other convulsive diseases, neuralgia, &c. To this class of patients the oinomaniacs or dipsomaniacs belong. (*c.*) Conditions the result of antecedent or actually existing (but insidious) disease of the brain or its membranes, such as attacks of "brain fever," infantile disorders affecting the brain or membranes, tuberculosis, and especially the sequelæ of mechanical injuries done to the cranium, and which at the time of occurrence attracted per-

haps little attention. (*d.*) Recent injuries to the head received in the drunken state, or diseases affecting the brain especially, which have come on very recently, as masked gout, certain forms of bronchitis, pneumonia, and pericarditis; inflammation of the liver, spleen, kidneys, &c. 2. *Conditions affecting the blood.*—(*a.*) Alcohol in the blood predominantly. (*b.*) Defective supply of nutrient materials in the blood, consequent on loss of appetite or inability to digest food. (*c.*) The presence of fever-poisons. (*d.*) Retained excreta, as carbon or carbonic acid, bile, urea, &c. 3. *Conditions of important viscera.* (*a.*) Inflammatory affections:—gastritis is hardly ever absent; duodenitis, with constipation, frequent; hepatitis and chronic nephritis, or chronic congestion of the kidneys, by no means rare. (*b.*) Structural diseases—as of the liver (fatty degeneration, cirrhosis), of the stomach (chronic thickening, ulceration), and of the kidneys (Bright's disease, cirrhosis), may be looked for. These are mentioned as predominant conditions; they do not exclude, however, other causes of morbid change in the brain and in the blood, and which are presented in cases of delirium tremens in great variety. Perhaps the most noticeable and important is the sleeplessness so constantly observed to precede and accompany the delirium, and which, itself a result of morbid changes, is usually, in its turn, a cause of those further morbid changes in the brain upon which both it and the delirium depend.

Now, the treatment of delirium tremens consists essentially in the treatment of these conditions; this object being satisfactorily attained, the symptoms cease, *i.e.*, a cure is effected.

[Here follow fifteen selected cases of great interest.]

The general rules for treatment of delirium tremens are simple: 1. The patient should be placed in as complete a state of muscular repose as possible. To this end, he should, if practicable, be kept in bed. Muscular activity necessarily exhausts the nervous system; hence, quiet of the muscular system facilitates repair of nervous energy. If, however, the patient cannot be kept in bed without mechanical restraint, it is on all hands allowed to be better not to restrain him, as the waste of motor power is much greater in the continued attempts the patient makes to keep from restraint, than in his usually quiet wanderings after unmeaning objects. Should his delirium be of the violent kind, absolutely needing restraint, chloroform would, perhaps, be in general a safer remedy than the strait-waistcoat, although not a remedy to be administered without serious consideration as to its fitness in each case. 2. All *sensational* stimuli should be removed, and all emotions, agitating thoughts, or anxieties, be prevented. 3. Food of a suitable kind should be carefully given from time to time; no alcoholic stimuli of any kind administered as articles of diet, unless specially indicated. 4. Where there is a tendency to diaphoresis, it should be encouraged as an eliminatory process.

5. The surface, and especially the feet, should be kept comfortably warm. If the head be hot, the hair may be cut short, and a gentle douche, for one or two minutes, applied every three or four hours; this is rarely necessary, however, much less shaving the scalp. 6. An experienced nurse must attend the patient. But, above all, it is essential that the practitioner be clear in his etiological diagnosis, so that he may be knowing as to the powers of nature. He should first determine whether the patient be under the influence of alcohol or not, and ascertain clearly whether there be any important complications. If the patient be alcoholised, and no important complications be discovered, he may consider the sleeplessness and delirium as of no great pathological importance, and calmly and confidently wait the result of a few days' judicious watching and general management of the case.

I will now examine some of the disputed points in the pathology and treatment of the disease.

1. *Is the delirium due to the withdrawal of alcoholic stimuli?* If this be not the fact, then the administration of spirits as a remedy is very questionable, if not wholly unjustifiable. Now, in only one of the twenty-two cases admitted into the infirmary last summer, was there a shadow of ground for stating this; in each of the twenty-one the patient was alcoholised when admitted. In the twenty-second case (poisoning by opium) the grounds for the assertion were of the slightest; other far more probable causes of the delirium were in operation than the return to sobriety. I cannot recollect, in fact, any case in which I could attribute the delirium to a withdrawal of the liquor. I regret to find that I differ with so high an authority as Dr. Watson on this point. Dr. W. says ('Lectures on Practice of Physic,' 4th edition), "In a large majority of instances you will find that he has been an habitual drunkard; and very frequently that, from some cause or other, his habitual stimulus has been diminished or taken away." But then Dr. Watson goes on to qualify this statement, by adding, "Some accidental illness has befallen him, and he has been restricted to low diet; and, as a sailor would say, 'his grog has been stopped.'" So that, in fact, Dr. W. includes "illness" and "low diet" (very common exciting causes) with the stoppage of the grog. It would be interesting to have Dr. Watson's experience on that one point alone.—I am much inclined to think it would correspond with my own. Dr. Wood of Philadelphia, in his 'Practice of Medicine,' makes this disputed point a part of his definition of the disease. "This is the delirious affection," he says, "which follows the suspension of the habitual use of alcoholic drinks. Its essential character consists in the cerebral debility consequent upon the cessation of an accustomed excitement." Then, in describing the symptoms, course, &c., he goes on with "the first effects of the suspension of the stimulus are feelings of great weakness." . . . . "Should circumstances, however, prolong the abstinence or privation, this preliminary condition becomes aggravated,

and the disease is fully formed," &c. Now, all this is by no means true to nature, as all observers must acknowledge; the more the man drinks the worse he is, until nature forbids more. Here, again, it would be interesting to have the data upon which these assertions are based. It would probably be seen that the delirium has been rather due to some "illness" coincident with the cessation of the stimulant, or to low diet, or to almost entire abstinence from food, or to want of sleep, or overwhelming mental anxiety, or some other *concomitant* causes. I dwell more especially upon this point in the etiology, because it is of vital importance as to the treatment of delirium tremens; and I therefore affirm distinctly and emphatically that I know of no recorded facts which contradict my experience, *i.e.*, which prove that the affection is consequent, actually or virtually, upon the withdrawal of intoxicating drinks. Now, on the other side of the question the evidence is abundant. Multitudes of drunkards cease drinking without suffering from the disease, or from any approach to it. Dr. Craigie, in his very able essay on the affection ('Elements of the Practice of Physic'), says, that he never witnessed an instance of this mode of development; and after perusing all the published cases extant, he could not perceive that any of them, excepting one recorded by Dr. Armstrong, afforded satisfactory evidence that the disease is induced in consequence of the sudden abstraction of spirituous liquors. Even that case, he adds, may be explained on other grounds. Dr. Craigie further states, that none of the continental physicians who have written on the subject, support the doctrine; while Dr. Ware of Boston, U.S., could not detect any such etiology in a large proportion of cases he examined. On the other hand, it is found, that in the recorded cases, as in those I treated, the symptoms were most usually developed after a continued fit of drinking for several days, during which the blood had become charged with the liquor. I would finally refer to Dr. Alexander Peddie's valuable essay on the affection, as containing additional and most conclusive evidence on this point. It may, therefore, be now stated, as a fact beyond question, that the delirium of the drunkard is due to other causes than cessation from the use of alcoholic stimuli.

What, then, are the causes of the affection. Clearly, I think, not one operating singly or specially, but several acting together,—what are termed by Sir William Hamilton con-causes. I have already indicated several of these. It is a subject, however, I need not dwell upon, as most systematic writers recognise the resemblance between the delirium attacking the drunkard, and that attacking temperate persons under certain conditions of the brain, the blood, and important organs; what is certain is, that, drunken or sottish habits strongly predispose to the affection when those conditions arise. The etiology, therefore, of delirium tremens comes under the general etiology of forms of delirium not due to structural or inflammatory disease within the cranium, and is a question of medical psychology.

Is Opium necessary to the cure of delirium tremens? Dr. Watson says ('Lectures on Practice of Physic,' 4th edition, p. 410), "The great remedy in delirium tremens is *sleep;* our most powerful means of inducing sleep are to be found in opium. The opium must be given in full doses; and it must be fearlessly repeated, if its desired effect do not soon follow. If the patients pass many nights without sleep, they will die. . . . . After clearing out the bowels by a moderate purgative, you may give three grains of solid opium; and if the patient show no inclination to sleep after two or three hours have elapsed, you may begin to give one grain every hour till he does sleep." So, again, Dr. Wood of Philadelphia (as deservedly high an authority in his own country as Dr. Watson is in this), describing the plan he follows, remarks:—"Two grains of opium, half a grain of sulphate of morphia, or an equivalent quantity of one of the liquid preparations of the drug, are given every two hours, and steadily persevered in until sleep takes place, or a decided narcotic impression is evinced." How contrary all this is to my experience in the Royal Infirmary, is obvious. I will only here add, that I have lately seen three cases, in consultation, which were being treated after the method recommended by these eminent physicians, with no benefit. In two of these (very severe cases), my medical friends approved of my suggestion, that the administration of opium be suspended, and a simple treatment followed; and the results were most satisfactory. In the third, it was thought advisable to persist in the stimulant treatment, and the case finally ended fatally. The evidence in favour of the stimulant method, by opium, wine, &c., is, in fact, one-sided; those who adopt that method do not try the other. But experience abundantly shows that sleep, and therewith return to health, will come on naturally in delirium tremens without the use of any narcotics, or even any drugs whatever. Continued sleeplessness, although highly predisponent to morbid action, does not necessarily destroy a man. I know a gentleman who never slept a moment for a month, yet with no bad results. It is the causal and concomitant conditions of the sleeplessness which are to be dreaded. Hence, when sleep is induced by opium, and these conditions remain, the patient dies nevertheless. When sleep supervenes naturally the causes of the delirium and sleeplessness are alike ceasing. The spontaneous termination of the disease in sleep is well known. Many years ago, Dr. Kuhn found no measure to answer so well as putting the patient into a dark cell, and "leaving the disease to work itself off spontaneously." Seamen, just after leaving the shore, are apt to suffer an attack, and have usually no treatment, yet recover after sleep. Esquirol and Calmeil treated their cases by the expectant method, using no narcotics, only diluents and warm baths, with repose; in the large majority of cases, recovery took place in four or five days. Dr. Ware, of Boston, watched and described the disease as it ran its natural course uninfluenced by remedies, and found that it was a self-limited affection; dating from the time when the state of

entire watchfulness and delirium commences, he found that it terminates by natural sleep in not less than sixty, or more than seventy-two hours. The only cases in which death took place after sleep came on, were those which had been treated by large doses of opium. He treated twenty-nine cases on the expectant method, one died; twelve by emetics, one died; eight with opium, four died. Opium, then, is not necessary to the cure of delirium tremens.

Is opium a safe drug to administer freely in delirium tremens? It is a remarkable illustration of the influence which usage and routine exercise on the judgment, to find how unsuspiciously, as to its bad effects, opium is prescribed in this class of affections. Patients who sleep and recover after its administration, sleep and recover, it is said, *propter hoc.* If they do not sleep, they have not had enough; but if they sleep and die comatose, with livid face and contracted pupils, then the disease, and not the drug, proves fatal. Here, I think, is a whole string of fallacies. Experience, rather than theory, is the safest guide; and that assures us it is never, under any circumstances, a safe proceeding to administer from five to ten or fifteen grains of opium in as many hours. Experience also shows, that in delirium tremens, while many have recovered without opium, and some in spite of it, none can be said to have died for the want of it. And if we were to enquire theoretically in what class of cases opium should not, or need not be given, we should find very few left in which it should. It is clear, that in the simple, uncomplicated, alcoholised cases, in which spontaneous recovery under judicious management is certain, opium is not needed, and is at least as dangerous, in the large doses recommended, as in the healthy state. Is it admissible in the complicated cases, as those with masked gout, cirrhosis of the liver or Bright's disease—or with gastritis, bronchitis, pneumonia, pericarditis, meningitis—or in those labouring under some epidemic, as scarlatina, influenza, continued fevers—or with meningitis, or cerebral inflammation from mechanical injuries? In any of these it would be a dangerous practice indeed to give opium, in the large doses recommended by Dr. Watson, and Dr. Wood. If, then we exclude all the uncomplicated cases, and those thus complicated, how many remain for the heroic hoses?

Is it necessary or safe to treat delirium tremens with alcoholic stimuli? If the patient be alcoholised at the very moment when it is necessary to prescribe for him, and is manifestly suffering from the effects of the alcohol, it seems hardly rational to propose that more should be given him "every two or three hours." Doubtless, people recover in spite of further doses—mainly. I think, because it is administered in diminished quantity: they may even recover after the administration of both alcoholic stimuli and opium; but it is to be feared that they sometimes sink under the remedies.

Is the treatment by tartar emetic and vomits necessary? A simple emetic will be useful, if there be bile or acrid stuff in the stomach. Dr. Klapp of Philadelphia, observing that the disease was apt to occur upon the cessation of an attack of vomiting in the intemperate, and that spontaneous vomiting relieved it, theorised thereon and came to the conclusion that it would be judicious to give two grains of tartar emetic every fifteen minutes until it operated as an emetic. The stomach and nervous system being often half paralysed sensorially, large quantities (more than gr. xvj.) were sometimes found to be necessary to induce vomiting! It is not possible to esteem this as other than a most dangerous proceeding. Dr. Graves administered tartar emetic more carefully, with the view of combating vascular excitement, and combining it with small doses of opium. In that particular class of cases in which the delirium is more sthenic than asthenic, and especially in those in which the blood is not alcoholised, this combination has been found beneficial; it is often thus used in cases of recurrent maniacal delirium. Dr. Peddie, had arrived at the use of tartar emetic before he knew of Dr. Graves' views, or that Stoll, Göden, Klapp, and others, and recommended it. He gives it in doses of gr. $\frac{1}{4}$ to gr. $\frac{1}{2}$, in simple solution, every two hours, believing it exercises a "direct influence in reducing the vascular excitement of the brain, soothing the nervous system, and diminishing muscular power; and its more indirect action is exerted on the functions of the skin, kidneys, and intestinal canal." Although I feel some doubts as to this theory of its action, I can well understand that tartar emetic, judiciously administered in the way Dr. Peddie recommends, may be of service for the alleviation of the symptoms in some of the more violent cases. Nevertheless, in the mild forms of the disease—and these constitute by far the most numerous—I should prefer to wait upon nature, and treat the symptoms, as they arise in each individual case, according to the general rules of art. Dilirium tremens, like all affections of the brain, is little amenable to remedies if associated with important cerebral disease, so that a few doses of tartar emetic, more or less, are of little importance in that class; while, when not so associated, or not complicated with important visceral disease, it happily soon terminates in health, if nature be left to do her work.

The practice of blood-letting in delirium tremens, and the administration of large doses of calomel, digitalis, and other active drugs, are sanctioned by so few systematic writers, that it is unnecessary to examine into their worth. It is to be hoped that the use of other heroic remedies will equally pass out of use, and a method of treatment be followed, grounded upon an accurate knowledge of the natural history and course of the affection in each case, to the exclusion of false theories founded on imperfect observations.—*Edinb. Med. Journal, October*, 1858, *p.* 289.

21.—DELIRIUM TREMENS TREATED WITH CHLOROFORM.

Under the care of Dr. P. Fraser, at the London Hospital.

B. G., aged 32, a japanner by trade, residing in Stepney, was admitted on May 8th, under the care of Dr. Fraser, suffering from delirium tremens. He was immediately sent into the attics; and on account of his extreme violence, male attendants were provided for him.

About 8 o'clock, chloroform was administered. It took a very small quantity to bring him under its influence. Its action was kept up for an hour, after which he continued in profound sleep. The attendant was ordered to send for the medical officer if he awoke; this, however, was unnecessary, as the patient did not wake till Dr. Fraser's visit at 1 p.m. He still suffered from many delusions. After he was left, he fell asleep without the administration of chloroform, and slept for two hours, when he awoke and partook of some beef-tea and brandy. He had also a powder, consisting of five grains of calomel with fifteen grains of jalap.

At 8 p.m., he was restless, with no delusions; complained of pain in his head.

At 11 p.m., he was still restless, and said he felt no tendency to sleep; his bowels had been relieved.

Chloroform was again administered; a large quantity being required this time to remove the stage of excitement. He continued to sleep for four hours.

May 9th. The delirium has entirely left the patient, and he has made a very tolerable breakfast of bread and butter and milk. He was ordered milk diet and beef-tea, three ounces of brandy, and a pint of porter. He slept in the evening.

May 10. He was ordered to have middle diet and a pint of porter, and to omit the brandy. He slept well.

May 11. He was ordered three grains of calomel and a scruple of jalap. In the evening, he was removed from the attics to the wards, and slept well.

May 12th. He was ordered decoction of cinchona with five grains of sesquicarbonate of ammonia three times a day.

May 15th. He was discharged cured, and left the hospital.

On inquiry of the patient since his recovery, it was found that he was taken ill on May 4th, and that the practitioner called in to attend him gave him medicine to "sleep him," as the patient says. He has never been an habitual drunkard, but has been in the habit of taking as much beer as he could without getting drunk.—*British Medical Journal, June 5, 1858, p. 447.*

22.—TRAUMATIC TETANUS. TREATMENT BY NICOTINE—RECOVERY.

Under the care of J. Simon, Esq., at St. Thomas's Hospital.

[The patient was a man 32 years of age, who had received a wound across the palm of the hand by falling upon a scythe. The palmar arch was evidently wounded—he losing a large quantity of blood at the time of the accident, and hemorrhage recurring frequently, till stopped by placing the well-padded palm between two flat pieces of wood drawn tightly together at the ends. The wound showed little disposition to heal. About fourteen days after the accident he began to have slight symptoms of approaching tetanus, and in two days more, the 14th of May, he had great difficulty of swallowing, muscular spasms, &c.]

He was now ordered to be put under the influence of nicotine. At first, one-twelfth of a minim was given hourly, combined with a teaspoonful of brandy and a desert-spoonful of water. The dose of nicotine was gradually increased until in the evening it reached one-sixth of a minim hourly. The effects of this alkaloid appear to be very transitory; it first produces giddiness, profuse perspiration, and nausea, and together with these a slower and feebler pulse, and marked alleviation of the muscular spasms. After the lapse of a few minutes, however, generally about a quarter of an hour, the pulse becomes fuller and stronger, the face flushed, and all the tetanic symptoms as severe as ever.

15th, 8 a.m. The tetanic rigidity about the neck, jaws, and back, is hourly increasing, and the muscular spasms of the hand and arm come on about every half hour, and are more severe. He had no sleep during the night, for the moment he begins to dose off he is roused up by very frequently repeated sharp twitches of the arm. He takes nourishment very well in spoonfuls, which was ordered to consist of beef-tea, arrowroot, and brandy. Pulse eighty-four, strong, full, and regular; respirations twenty. The nicotine was increased to $\mathfrak{m}\frac{1}{4}$, and then $\mathfrak{m}\frac{1}{3}$ every half-hour; but in the afternoon the dose was lowered to $\mathfrak{m}\frac{1}{4}$, and given hourly, as it produced faintness and sickness, and the latter symptom was the more necessary to be avoided, inasmuch as it was very difficult and tedious for him to get rid of the fluid contents of the stomach from his mouth. The contraction of the jaws is complete, and deglutition painful and difficult.

Vespere. Complains of more pain in his back; spasms more general over body; those in the arm and jaws are very severe, and occur about every twenty-five minutes; bowels not open; to have a common enema.

16th. Slept for some little time during the night, when the spasms, although they came on even more frequently, did not wake him. He has been sick two or three times; takes his food very well;

enjoys most his tea and brandy; to have only $\mathfrak{m}\frac{1}{6}$ of nicotine every two hours.

Vespere. No sickness since the dose was lowered; paroxysms frequent and severe, but not more so than they were; pulse seventy-eight; continues to take plenty of nourishment; bowels not open; repeat enema.

17th. Very little change; slept somewhat better during the night; the paroxysms are more frequent, but not quite so severe. The wound is going on favourably, but the two inner fingers are very stiff and contracted, and there is intense aching pain up the arm. He is now having nicotine $\mathfrak{m}\frac{1}{6}$ hourly.

18th. To-day he expresses himself as somewhat more comfortable, and can open his mouth very slightly. Pulse seventy-two, more feeble. Perspiration still very profuse after taking the nicotine. He is paler, and more anæmic. The bowels are opened daily by means of a clyster. Takes sufficient nourishment, and during the day about ten ounces of brandy. Ordered to continue the nicotine, and to have ferri. sulph. gr. vii. ex aquâ ter die.

19th. No great alteration as regards the tetanic symptoms. His face and eyes have a somewhat jaundiced hue, and his breath is very foul. Bowels not open. To have four grains of calomel directly, and a purgative enema afterwards.

20th. Passed a very restless night, for the reason that directly he sleeps the rigidity of the maxillary muscles becomes relaxed, but the spasmodic paroxysms being more frequent causes his tongue to be severely bitten. To-day he has slight opisthotonos, but less pain and spasms in the hand and arm. Wound going on favourably. Bowels well relieved after the calomel. Motions very offensive.

Vespere. The tetanic spasms are more and more extending to the muscles of the back and abdomen, the paroxysms occurring about every three minutes, but only of momentary duration. Perspiration very profuse. Pulse eighty-eight, weaker, more irritable, and often intermitting. Up to this day he was always benefited obviously by the nicotine, but it is now found that he is decidedly better after taking brandy alone than after nicotine, so that the latter was ordered to be omitted altogether, and the steel to be continued, together with about twelve ounces of brandy daily, and various articles of nourishment at frequent intervals.

21st. The pulse has risen rapidly since leaving off the nicotine, being now 112. The tetanic spasms are gradually extending downwards, and now affect the thighs; opisthotonos increasing. The patient is continually calling out for some one to press down forcibly his chest and abdomen, which he says not only keeps the back from being excessively arched and stiff, but materially relieves the pain of the crampy seizures. One dose of the nicotine draught, containing $\mathfrak{m}\frac{1}{4}$, was tried to-day, but the pulse became directly more feeble and

intermitting, and the opisthotonos increased, so that it was not repeated.

22nd. Passed a restless night, but says he feels decidedly better, and is always easier for a short time after taking the brandy. Requires an enema daily. Continues to take the steel draught, brandy, and sufficient nourishment. The spasms occur about every quarter of an hour, and chiefly affect the back and lower extremities.

23rd. Slept very well last evening, but not during the night. Hand more painful, but wound healing nicely; fingers much contracted. Opisthotonos considerably better. The cramps are now only in the legs, but there are frequent "catches" in his breathing, with hiccough.

24th. Decidedly better in all respects.

25th. Spasms only about every half-hour, and much less severe. There is, however, rather more tonic contraction of the muscles of the back, though not more pain, and he sleeps very well. Pulse ninety-eight.

27th. Still daily improving; this morning his chest, abdomen, and legs became covered with sudamina. From this time the patient gradually recovered. Occasionally, indeed, the symptoms were aggravated without any obvious cause, but only for a few hours each time. During these periods the pulse was invariably quicker and intermitting, and the breathing more rapid; but it was not found necessary to alter the plan of treatment, and all went on favourably. It was on the evening of the 23rd (the twelfth day after the first appearance of the tetanic attack), that a decided change for the better took place, and from that time all misgivings as to a fatal result were at an end.

July 26th. The man is still in the hospital, but quite well, and up about daily. No contractions remain, but he complains of still feeling some soreness in the muscles which were affected.—*Med. Times and Gazette, July* 31, 1858, *p.* 112.

23.—CASE OF INFANTILE CONVULSIONS SUCCESSFULLY TREATED BY CARBONATE OF IRON, AFTER FAILURE BY OTHER MEANS.

By Dr. S. Lawrence, Montrose, Corresponding Member of the Edinburgh Obstetric Society.

(Read before the Edinburgh Medico-Chirurgical Society.)

[In England and Wales, for five successive years, the average number of deaths from convulsive diseases in children was 25,000. Dr. Lawrence relates a case of violent convulsions in a young child, in which, after the failure of other means, it was determined to try the inhalation of chloroform. Any contribution promising to lessen the fearful fatality of these diseases must be received as a boon by the profession.]

Accordingly, at twenty minutes past 12, the administration of the

chloroform was begun. Ten minims were poured on a linen handkerchief and held before the face of the child; at intervals of from four to five minutes, about half this quantity was added. In fifteen minutes after commencing the administration, a paroxysm occurred; but believing that this might be due to the little patient not being fully under the influence of the vapour, its application was continued, in the manner just stated. The breathing and pulse were at first hurried in frequency, and it was not till one o'clock, *i.e.*, forty minutes from the commencement of the application, that these became calm, and that from the tranquil sleep into which the child had passed, satisfactory evidence was afforded that anæthesia was fully produced. The same mode of administration was continued till 1.30, when another paroxysm occurred of equal severity as before. Although we felt disappointed at this, the chloroform was still persevered with, the little patient being kept under its influence as above described. The recurrence of the convulsion, notwithstanding the sedative influence of the vapour, showed how excessive the irritability (superpolarity) of the spinal nervous system had become; while, on the other hand, the extension of the interval between the attacks, from about fifteen minutes to nearly an hour, encouraged the hope that a further perseverance with the remedy might lead to their entire cessation. Such hope, however, was doomed to be disappointed. At 2.30 another paroxysm occurred; again at 3.25; then at 4.5; and, finally, at 4.12; the intervals between the paroxysms thus beginning to get shortened instead of becoming more prolonged. The last paroxysm mentioned being one of much severity, the chloroform was applied in somewhat closer contact to the face of the child, but an alarming attack of asphyxia was produced, which well nigh cost the poor little patient his life. The imminent hazard to which he had thus been exposed, and the otherwise unsatisfactory result of the remedy, alike forbade the repetition of the chloroform.

After fully recovering from the state of extreme depression into which he had been thrown by the inhalation of the narcotic vapour, the paroxysms returned with their former frequency and severity; the number, as carefully noted, between 6 p.m. on Saturday and 12 a.m. on Sabbath, *i.e.*, during eighteen hours, being 77, or at the rate of 4·27 per hour. During this period he had, at varied intervals of from two to four hours, four doses of an oleaginous mixture composed of turpentine and castor oil in dill water, with a minute quantity (1-48th of a grain) of opium in the form of syrup of poppies, half a drop of laudanum being added to two of the doses. While no perceptible diminution was effected either in the number or severity of the attacks by the exhibition of this medicine, a very manifest degree of narcotism was produced; and it was accordingly deemed advisable to discontinue it.

All the usual remedies having now proved abortive, it was resolved, in consultation with Drs. Johnson and Ross, to make trial of the

carbonate of iron, which had been found in the hands of Dr. now Sir Charles Locock, in a similarly obstinate case, to be attended with the happiest result.—(See 'Cyclopædia Medicine,' Art. Infantile Convulsions.) Four grains of this preparation, in half a teaspoonful of honey, were accordingly given at 1 p.m. on the 7th, and repeated every second hour unless the infant was asleep. The effect was not immediately apparent, but was by and by seen to be of a very unsatisfactory character. Every attack being noted the moment of its occurrence, I was enabled to institute comparisons between one series of hours and another, and thus to elicit unequivocal proof of progressive amendment. During the twelve hours preceding the commencement of the iron, the number of convulsive paroxysms was 49, or one more than four an hour. During the first twelve hours of administering the drug, the number of paroxysms had fallen to 35, or one less than three an hour. There seemed enough in this fact to encourage a perseverance with the remedy. Keeping by twelve hours as the period of comparison, the results on Monday and Tuesday, the 8th and 9th, were found to be as follow:—

First 12 hours on Monday, 31 attacks.
Second 12 hours on Monday, 21 do.
First 12 hours on Tuesday, 17 do.
Second 12 hours on Tuesday, 12 do.

After which the attacks ceased, the last have occurred at twenty minutes past midnight on Tuesday, the 9th February.

Or, to exhibit at one view the results now stated. If we take the twelve hours preceding the exhibition of the iron, and the sixty hours during which it was administered, we have six periods of twelve hours each for comparison, and they may be tabulated thus:—

Periods.	Number of Attacks.	Numerical Decrease.	Per Centage of Decrease.
Before the iron, 1st,	49		
While the iron was being given - - 2d,	35	14	28·57
" " " 3d,	31	4	11·42
" " " 4th.	21	10	32·25
" " " 5th.	17	4	19·04
" " " 6th,	12	5	29·41

A glance at this table will show that the ratio of decrease was not uniform throughout the period of the administration of the iron. But, doubtless, its remedial influence was modified from time to time by the prevailing amount of intestinal irritation; for it was observed that

when *tornina* happened to be particularly distressing, the convulsive paroxysms recurred with greater frequency. Still, the most cursory examination of the facts above noted cannot fail to produce the conviction that a curative influence was steadily exerted by the ferruginous preparation. The same truth was taught to myself and medical brethren who watched the case with me in another way, which cannot be expressed by figures. The paroxysms not only declined in frequency, they manifestly, after the first twelve hours of the iron, abated in severity.—The entire amount of the iron preparation taken by the child, up to the occurrence of the last paroxysm, was 104 grains; and, as stated above, the period over which its administration extended was sixty hours; giving an *average* interval of about two hours and twenty minutes between the doses. A few doses, at more lengthened intervals, were given after the cessation of the attacks, by way of guarantee against their recurrence.

Reckoning its commencement from Wednesday the 3d, when the convulsions properly so called were first manifested, the case had reached but the fifth day when the administration of the iron was begun, and when no symptom of exhaustion or of impaired nutrition had been exhibited. And yet, while the case was thus still to be regarded as recent and acute, the iron was administered with the happiest effect. So far, then, as a single case can form a safe basis of judgment, my inference is this, that if all offending matter has been got rid of from the stomach and bowels, and other existing source of irritation removed—if the circulation is tranquil during the intervals of the paroxysms, and if no organic change is associated with the malady, *the exhibition of the iron cannot be too soon begun.* I respectfully submit this opinion to my professional brethren, leaving it to be either verified or disproved by future observers.

[On hearing Dr. Lawrence's paper, Dr. Pattison said that he recollected a similar case, where, at the recommendation of Dr. Simpson, chloroform was tried with very good results. As soon as anæsthesia was produced the convulsions abated to a great extent; the remedy was persevered in for three days, and on the third day no fit occurred.]

Professor Simpson stated, that in reference to Dr. Pattison's remark, he took the opportunity of observing, that in a considerable number of cases of convulsions, of the kind alluded to by Dr. Pattison, he had used, or recommended to be used, chloroform, with the effect of arresting the convulsions. He was not aware whether Dr. Lawrence had employed it or not, as he had only heard the end of his communication. The cases in which he had used chloroform were cases of infantile convulsions, of a so-called functional form, inasmuch as they seemed to exist and continue without any acute or appreciable morbid action or lesion in the nervous centres, and without any recognisable point of irritation in the peripheral parts. The first case

in which the inhalation of chloroform had ever been employed, was one in which a child of a few weeks old was dying of the disease, and where a variety of previous means, tried by himself and others, had entirely failed in having any beneficial effect upon the malady. The fits of convulsion were recurring very often, each commencing with a shriek or moan, which it was most distressing for the relatives to listen to. The grandmother of the child suggested to Dr. S. to use chloroform as a means of euthanasia, the case being one considered to be beyond all hope. Dr. S. at once adopted the proposal, explaining, that he believed it might possibly arrest the convulsions, but had never yet been tried in infantile convulsions. The fits were at once arrested when the child was brought under the action of chloroform, but speedily returned when its influence was withdrawn. The little patient was at last placed for about twenty-four continuous hours under chloroform, being allowed, however, to come out of the chloroform state every two or three hours, so far as to be able to have nourishment administered to it. At the end of these twenty-four hours all tendency to the recurrence of the convulsions seemed removed, and the child was in fact well, and required no more medication. He is now seven or eight years old, and has kept in excellent health. But the inhalation of chloroform did not always arrest infantile convulsions so speedily. The case in which he had seen it required for the longest period was one he visited with Dr. Combe. The child was six weeks old, and so near death, despite of all the judicious measures employed by Dr. Combe, that Dr. C. was inclined to advise that nothing more should be tried, as whatever was done might possibly be blamed as the cause of death. The fits, however, were at once so distinctly arrested when the child was placed under the full influence of chloroform, that it was agreed to continue its use. The child was, as usual in such cases, fed every two or three hours—the state of anæsthesia being abated for that purpose. In this instance, the tendency to the recurrence of convulsions continued for days, whenever the action of the chloroform was discontinued above fifteen or twenty minutes; but the exhibition of a renewed dose of chloroform at once and immediately arrested them. In consequence, it was found necessary to keep the child more or less completely under chloroform for fourteen consecutive days, before all tendency to the recurrence of the convulsions was eradicated. During that period, a very large quantity of chloroform was necessarily used. The child was well fed during the time, and all around it believed, that instead of falling off, it increased in weight and size during these fourteen days. The child, which recovered perfectly, died, when a few years old, of acute peritonitis. In other forms of convulsive disease, as in the common form of puerperal convulsions connected with albuminuria, chloroform, when given in sufficient doses, usually and entirely counteracted the tendency to convulsions. The rationale of the action of chloroform in those forms of infantile and puerperal convulsions which were under its control, was perhaps

this, that the drug acted as a sedative or antidote to that state of super-sensibility or super-polarity of the spinal system, which, however induced, constituted the essential pathological state upon which these convulsions depended. It might be that iron, and other neurosthenics of the same class, would cancel also this same morbid condition, or super-polarity, as we knew indeed to be the effect when cholera was cured by iron, and analogous nervine tonics. The exhibition of such a tonic would, perhaps, in practice, not be found contra-indicative of the use of chloroform to allay the convulsion fits, particularly if the patient were much debilitated; possibly they might aid the beneficial and curative action of each other.—*Edin. Med. Journal, June* 1858, *p.* 1145.

ORGANS OF RESPIRATION.

24.—ON SOME POINTS IN THE THERAPEUTICS AND CLINICAL HISTORY OF ASTHMA.

By Dr. Hyde Salter, Assistant Physician to Charing Cross Hospital.

[We have endeavoured in the following articles on asthma to collect the most interesting of Dr. Salter's opinions on this subject: but the papers by this physician are so able and so interesting, that we would strongly advise the reader to go to the various journals themselves from which we have drawn so largely, if he wishes to make himself master of the subject.]

General Considerations, Classification of the Remedies of Asthma.—[The subject of asthma is one to which but little attention has been given by the profession, and upon which moreover erroneous notions too much prevail. This is probably owing to its being so frequently marked by organic disease, to the recondite nature of its pathology, and to its unsatisfactory therapeutics, at least by the modes of treatment commonly adopted.]

Asthma is an interesting example of the way in which therapeutics hang and hinge on pathology. What, then, *is* the pathology of asthma—what *is* asthma? I think the best and shortest definition we can give of asthma, and one in which clearness and truth are not sacrificed to conciseness, is, that it is *the spasmodic stricture of an excretory duct.* We may look upon the lungs as a great pair of conglomerate glands constantly excreting carbonic acid gas and watery vapour; and this view involves no stretch either of anatomical or physiological truth: the structure of the lungs is, in all essential points, strictly that of a conglomerate gland, and the slight points of difference are merely dependent on the gaseous nature of the materials excreted. Of these materials, the bronchial tubes are the excretory ducts or

means of out-draught. The only other spasmodic strictures of excretory ducts that we are acquainted with are those of the gall-duct and urethra; but it is possible that all excretory ducts of considerable size may be the seat of spasmodic stricture, because they all of them contain organic muscle. In being, therefore, the seat of spasm, the bronchial tubes differ no more from the other excretory ducts than they do in possessing muscular walls. But in many and important respects asthma differs strikingly from all other spasmodic strictures whatever; in its suffering. its causes, its gravity, its treatment: and I think these differences have their explanation in the four following circumstances, in which the bronchial tubes are peculiar, and unlike other excretory ducts :—

1. The vital and ceaseless function of which they are the seat.
2. The many and various sources of irritation to which their situation and function renders them obnoxious.
3. The delicate susceptibility to stimulus and proneness to contraction that their purposes in health render essential.
4. The number of organs and functions with which their wide-spread nervous connexions bring them into relation.

The mere enumeration of these peculiarities will at once suggest to the mind, without the necessity of illustrating them, the way in which they impart to bronchial stricture the peculiar features of asthma.

Asthma certainly does not suggest to one's mind the idea of spasmodic stricture ; it suggests the idea of some severe lung-disease ; and this superficial and *prima facie* impression often makes the uninitiated consider asthma as an attack of inflammation of the lungs ; indeed, I have known many cases in which medical men have made this very mistake. Nevertheless asthma is, and is nothing more than spastic stricture of an excretory duct ; that is its true pathological position, und its treatment is in entire accordance with this interpretation of its pathology.

The treatment of all diseases that are at once chronic and paroxysmal aims at two objects—the relief of the paroxysm when it exists, and the destroying in the intervals of health that particular diseased tendency which calls the paroxysm into existence. And each of these objects—that is, the cure and prevention of the paroxysm—may be obtained in two ways : positively, by the application of certain remedial agents ; negatively, by removing the exciting cause during the attack, and by preventing the exciting cause and removing the predisposing cause during the intervals. Now, asthma is one of these chronic paroxysmal diseases, and its treatment naturally divides itself into the treatment of the paroxysm and the treatment in the intervals of the paroxysms ; and although the last is the real treatment of the disease, while the treatment of the paroxysm is merely the treatment of a symptom, yet in asthma the paroxysm is, potentially though not essentially, the disease itself, for it is its sole manifestation—the only

source of suffering and the cause of those organic changes in the heart and lungs that asthma gives rise to, and that alone makes it formidable. The diseased tendency without the paroxysms, if we can conceive such a thing, might be disregarded—it would be a non-entity, for that which has no manifestations has no existence. If, then, we can in any degree retard, cut short, or mitigate the paroxysms, we in such degree abolish the disease, and diminish its suffering and its morbific tendency. But while I thus assert the great importance of the treatment of the asthmatic paroxysm, I must admit that the treatment of the disease in the intervals is the paramount part of its therapeutics; and I must confess also, that I think it has not had sufficient attention given to it, and that the efforts of the physician have been too exclusively directed to the mitigation of the sufferings of the paroxysms when they have arisen. We may, perhaps, see at once some explanation and some excuse for this when we remember, on the one hand, how occult the essential diseased condition in asthma is, how often it eludes detection altogether, and how perfect apparently is the health of the asthmatic in the intervals; and, on the other, how urgent are symptoms when they arise.

The remedies at our command for relieving an attack of asthma, as it is called, for cutting short, or mitigating asthmatic dyspnœa, appear to me to be of five kinds.

a. Those which remove the exciting cause.

b. Those which diminish nervous irritability—sedatives.

c. Those which directly lower nervous and muscular power,—depressants, contra-stimulants.

d. Those which exalt the activity of cerebro-spinal and voluntary nervous action, and proportionally diminish the organic and reflex—stimulants.

e. Those which in some way or other diminish or annihilate the asthmatic tendency, whose *modus operandi* is obscure, which we may perhaps call *specifics*, but which may possibly act as stimulants or sedatives.

It will at once be seen that the three first classes of remedies—those which remove the exciting cause; those which diminish nervous irritability, sedatives; and those which directly lower nervous and muscular power, depressants, contra-stimulants—are exactly those to which we resort in the treatment of spasmodic stricture in general.

As an example of the first class of remedies—those which remove the exciting cause—I may mention emetics, which, by emptying the stomach of an undigested meal, for instance, may remove the immediate cause of the attack.

As an example of the second—*sedatives*, I may mention stramonium, which, by diminishing the irritability of the nervous system, destroys the efficiency of the irritant—renders the exciting cause impotent, that is, without removing it.

As an example of the third—*depressants*, I may mention tartar-emetic, or tobacco, which, by directly lowering nervous and muscular force, relax bronchial spasm just as they would a hernial strangulation.

As an example of the fourth—*stimulants*, I may mention strong coffee, and violent emotion, which, in obedience to the well known laws of relation between reflex and voluntary nervous action, appear to diminish the activity of the organic nerve and muscle concerned in bronchial spasm, in proportion as they exalt that of the brain and of the nerve and muscle of animal life in general.

As an example of the fifth—*specifics*, whose *modus operandi* is obscure, I may mention the air of certain localities.

There are two ways in which the remedies for asthma may be exhibited and brought to bear on the nervous and muscular system of the air-passages: either *indirectly*, by being introduced into the blood, as in the ordinary way of swallowing, and gastric absorption; or absorption by the mucous membrane of the mouth, as in smoking; or, secondly, *directly*, by being applied to the bronchial tubes themselves, as by inhalation. This last has, I think, especial advantages; it has, indeed, all the advantages of local treatment—its concentration, its manageableness and rapidity of result; the air passages are peculiarly favourably placed for this topical medication, and the movements of respiration supply us with a natural and easy means of conveyance. I believe that much more is to be done in this way for the treatment of asthma than has yet been attempted. Of the remedies thus exhibited, that which has had the longest and fairest trial, and has obtained the greatest reputation, is the inhalation of the fumes of burning nitre paper.

On the treatment of Asthma by the inhalation of the fumes of burning nitre-paper. One of the most valuable remedies that recent experience has furnished us with for the treatment of asthma consists in the inhalation of the fumes of burning nitre-paper—bibulous paper which has been dipped in a saturate solution of nitre, and dried. How or by whom it was discovered, or exactly when, I know not; but from the references made to it by different authors, it must have been in use for nearly twenty years, and its great value and efficacy are now beyond question.

[Several interesting cases are then related. One of these was the daughter of a medical man; she had been subject to asthma ever since her fourth year; her father says that, save in those attacks which resulted from inflammation of the mucous membrane of the bronchi, his daughter always experienced very great relief from burning bibulous paper, previously soaked in a saturated solution of nitrate of potass and then dried; it always mitigated, and sometimes completely relieved the spasmodic condition of the air tubes. A gentleman, who for five and twenty years has been subject to frequent attacks of asthma, writes thus to the author.]

"I certainly have great faith in the fumes of nitre. I have used it for twenty years, and *when the difficulty of breathing is purely spasmodic* I am sure to get relief by its use. I use it in the following manner; when I feel my breathing uneasy I burn a piece of the saturated blotting-paper in my bedroom on going to bed, and, by lying high at head, I am almost certain of getting a good night, and of leaving my room in the morning free from the paroxysm. I use *blotting*-paper, but a friend in London tells me that he uses *tissue*-paper, which is thinner, and does not smoke so much. I think this is an improvement, but there is more difficulty in saturating it, in consequence of its thinness."

This gentleman adds—"Sometime since, I heard of a very bad case at Sturminster Marshall. I sent the poor man some papers, and requested to be informed, in the course of a few days, what effect they had upon him. I enclose the poor fellow's answer; he is only a farm labourer." The answer was, *verbatim et literatim*, as follows:—

"June the 20, 1855. Honored Sir I have made a trial of your Goodness what you sent to me Sir and I am Happy to inform your Honoured that it is the Best advice I ever had at all for I went to Bead at 7 at night and never a woke until 5 the next morning and that is more that I have done for this 10 weeks past. Honored Sir I do not know how to express my grattitude to you a nogh for your great and merciful kindness to me. Honored Sir I return you Sir most Humble and Hartery thanks for your goodness to me. Sir I remain your obedient and oblided servant J. CHRISTOPHER."

Let me give a few practical hints with regard to the making of the nitre paper. And this is not an unimportant point, for patients will find it more convenient to prepare the paper themselves, and if it is not properly made, it will not produce its beneficial results. The object is to have as much deflagration of nitre and as little combustion of paper as possible. For that purpose the paper must not be very thin, or it will not take up sufficient nitre; or very thick, or it will make the fumes too carbonaceous; but it must be moderately thick, and very porous and loose in its texture, so as to imbibe a sufficiency of the solution. The strength of the solution should be saturate at the ordinary temperature. If a saturate solution is made with warm water, and the paper is very bibulous, it becomes too much impregnated with nitre—too strong a paper, and burns too fast, with a sudden explosive flame. There should be no brown smoke in its combustion, but light, clear, white fumes. Those who have had a good deal of experience with this remedy tell me that they find the red blotting-paper, of moderate substance, the best. Some blotting or filtering papers appear to have a good deal of wool in them; they are loose, thick, and coarse. They should be particularly avoided, as they yield, on burning, a smoke of a particularly irritating and offensive kind, something like the smell of brown-paper smoke, only worse. The nitre-paper, when once made, should be kept in a dry place, and

then will not be the worse for any amount of keeping; but if it gets damp, it does not burn with sufficient freedom, and should then be dried before using.

The following is the way in which an asthmatic gentleman tells me he has been accustomed to make a paper that answers perfectly well: —"Dissolve four ounces of saltpetre in half a pint of boiling water; pour the liquor into a small waiter, just wide enough to take the paper, then drain it through the liquor and dry it by the fire; cut it into pieces about four inches square, and burn one piece in the bedroom on retiring to rest at bed-time." I have tried this method of preparing the paper myself, and find that it burns perfectly well and is very efficacious; but I think *two* pieces are not at all too much to burn at once.

Treatment by Direct Depressants—Ipecacuan, Tobacco, Antimony —Value of Tobacco in Hay-Asthma.—Of all the different kinds of evidence on which we build our theories of the pathology of diseases, there is none more convincing, or that tells a plainer tale, than that which is derived from therapeutics. The success of a remedy given on certain principles proves the correctness of the principles on which it was given, and the known action of a medicine directly implies the nature of the pathological state that it relieves, as it shows that in any case of its successful administration the pathological state must have been such as that known action would antagonize or correct. This reflected evidence has all the force of the fulfilment of a prediction; it is like the appearance of Halley's comet at the exact time that its discoverer foretold.

The purpose of this communication is to direct attention to the great efficacy and value. in the treatment of asthma, of certain drugs belonging to a class whose therapeutical action is very strongly marked, and about whose *modus operandi* there is no doubt, and which throw, therefore, a very clear light on the nature of the pathological condition that they relieve—the class of direct *depressants* or *contra-stimulants*. It is a class of remedies that exercises the most singular and powerful influence over the asthmatic condition, greater and more immediate than any other I know, except, perhaps, mental emotion. As soon as their characteristic effect is established, the dyspnœa ceases—completely ceases from that moment; no matter how intense the spasm may have been, the moment the sensations characteristic of collapse are felt it yields, and the respiration is free, and the patient passes from agony to ease. It is one of the most striking things to witness, in the way of the effect of a remedy, that can be imagined.

The three drugs of this class with whose use in asthma I am most familiar are, ipecacuan, tartar-emetic, and tobacco. No doubt they all act in the same way—by lowering innervation, depressing nervous vitality or irritability, or whatever we may call it, and enfeeble the contraction of the bronchial muscles just as they weaken the heart's action, or relax the grasp wherewith a strangulated hernia is constricted, or relieve urethral stricture, or the spasm of colic.

With regard to their *modus operandi* in asthma, I think a good deal of misconception very generally prevails; they are thought by some to act as emetics, by some as so-called expectorants. I believe they act neither as one nor the other, but as direct depressants, relaxing the spasm of the bronchial tubes in the way I have mentioned. Let me just relate a case in which I had ample opportunity for some years of watching the effect of ipecacuanha.

The patient was a youth who had been asthmatic from his infancy. His attacks had increased in frequency till, at the time to which I refer, they occurred with tolerable regularity once a week. His asthma generally woke him about four or five o'clock in the morning, and soon compelled him to sit up and wheeze in bed, or get out of bed and stand against some piece of furniture for support. In two or three hours he would be able to dress himself; and, perhaps, in the forenoon, the severity of the dyspnœa would a little abate; but towards the afternoon and evening it would deepen, and towards bedtime get so intense that without an emetic there was no chance of sleep. The emetic would be taken, and in half an hour he would be perfectly easy, without the slightest trace of asthma. He would then take a light supper, go to bed, sleep like an infant, and have no more asthma till that day week. In this way he would have fifty attacks, or thereabouts, in a year; and cut them short at night with fifty emetics. If he did not take the emetic, he passed a miserable, sleepless night, and was still bad the next day; indeed, there was no definite end to the attack without it. I think *now*, that if he had taken it earlier in the day, or even in the morning on first waking up asthmatic, he would have cut short the attack equally well, and have saved himself a great deal of suffering. I never knew it fail. The dose taken was always twenty grains of the ipecacuanha powder; and, although he repeated it so frequently, it neither lost its efficacy nor did him any harm. It was clearly not as an emetic that it acted, but as a depressant; for the relief took place before the vomiting. About ten minutes or a quarter of an hour after swallowing the draught, a sense of nausea would be felt, accompanied with a slight faintness, and dampness on the skin, and a profuse secretion of saliva, which came from his mouth in a little clear stream. It was then that the spasm gave way, before a single act of retching had occurred; and his attendants would immediately know when the first sense of nausea was felt by the relief of the breathing that invariably accompanied it. Besides, the stomach was always perfectly empty; there was nothing of which it could be relieved.

The effect of *tobacco* is exactly the same, only the depression that it produces is more profound and amounts to actual collapse, and the relief, therefore, more speedy and complete. In those who have not established a tolerance of tobacco, its use is soon followed by a well-known condition of collapse, much resembling sea-sickness—vertigo, loss of power in the limbs, a sense of deadly faintness, cold sweat,

inability to speak or think, nausea, vomiting. The moment this condition can be induced the asthma ceases, as if stopped by a charm. In one case in particular I have frequently watched its effects. In the case that I refer to the asthmatic fortunately never established a tolerance of the drug, and thirty whiffs of a pipe or half a cigar would at any time induce a condition of collapse. I have known him begin to smoke when his breathing has been so difficult that he could hardly draw his pipe; he would draw a feeble whiff or two, and then stop to recover his breath, and then another whiff, and so on. By-and-by he would lay down his pipe with a look of intelligence at his attendant, as much as to say "it's all right now;" his face would become pallid and damp with perspiration, his limbs relaxed, his breathing long and sighing, but his asthma was gone. His object was to smoke just so much as to produce this condition, and no more, so that the moment he felt the sensation coming on he stopped. After this qualmy condition had continued for twenty minutes or half an hour, it would go off and leave him well—the attack cured. Sometimes, however, he would take a little too much, and then it would go on to vomiting, and sometimes he would overdo it altogether, and produce a deadly and protracted collapse, from which it seemed as if he would never recover. I have known his pulse hardly perceptible for nearly two hours, in spite of ammonia and brandy freely administered. It is this circumstance—the fear of this horrible and unmanageable collapse—that makes one so unwilling to employ tobacco; it is indeed a dreadful remedy, almost as bad as the disease; but the asthmatic is willing to undergo anything to get quit of his sufferings.

The following account, illustrative of the effect of tobacco, I have received from an intelligent patient long subject to severe asthma:—

"I have always found perfect relief from smoking tobacco in the attacks of spasmodic asthma to which I have been liable. In describing my own experience, I should say that no relief is felt till the poison gives evidence of having taken effect by its disagreeable consequences; and just in proportion to the sickness and faintness, and other miserable sensations, is the relief of the difficult breathing. I never knew this remedy fail. As the use of tobacco was new to me, it affected me very powerfully, and produced the most miserable prostration and faintness. The cure of the asthmatic spasm was very speedy, and frequently it was forgotten altogether in the horrors of a sensation known to all novices in smoking, so that I was frequently unconscious of its disappearance, or of the mode or time of its departure; the asthma seemed supplanted by another condition, and cold perspiration and fear of collapse closed the scene. I am not aware whether this was followed by expectoration, and the presence of mucus in the throat removed by the usual process—the common action of 'clearing the throat,' as it is called—which invariably appears when an attack of asthma spontaneously subsides, and which always accompanies the

slower cure resulting from the mild use of ipecacuanha, which of late years I have preferred to tobacco, as my asthma is not of sufficient intensity to require so violent and distressing a remedy. I imagine these more natural and ordinary symptoms of recovery would always accompany the use of ipecacuanha, and that an increased dose would only accelerate the process of recovery up to the interruption by vomiting. The difference between the characteristics of these two modes of cure appears to me to be strongly marked and very important. I conceive this to arise from the intensity of the depression caused by the poison of tobacco, which cannot be the case in the use of ipecacuanha, as it is a simple emetic, and I doubt if the same kind of sensations and depression could be produced by ipecacuanha, even if its effect could be carried on, and the medicine were not rejected by the stomach, which is invariably the case when the effect is increased to a certain point. I have not gone beyond the stage of perspiration and a feeling of sickness, and I have always found the cure to resemble the natural process of mucous discharge and clearing of the air-passages, only more promptly induced and more rapidly performed. I have frequently had short spasms of asthma produced by laughing, lighting a lucifer match, or some other special irritant, from which I have recovered as rapidly as when under the influence of ipecacuanha, going through the stages of silent asthma, audible asthma, and the expectoration mentioned above, in about the space of ten minutes or a quarter of an hour. The distinction between these two modes of cure or relief is worthy the attention of medical men and their patients, as much distress and perhaps injurious results might be avoided if the ipecacuanha is found to be as efficacious as tobacco. My only doubt is whether tobacco might not be preferable in desperate and suffocating spasms on account of its speedy and violent action."

No doubt there is such a difference as that indicated above in the action of tobacco and ipecacuan. Ipecacuan, I think, could never produce such collapse as that caused by tobacco, but that it does not always act as an expectorant or emetic, but as a direct depressant, is shown by the case that I related just now. The fact is, ipecacuan acts very differently on different individuals: in some, producing vomiting with little more irritation than sulphate of zinc; in some, producing collapse to a considerable degree. Moreover, by relaxing the bronchial spasm, ipecacuan renders free cough and expectoration possible, which were previously impossible, from inability to get sufficient air into the lungs to effect them; so that the expectoration is the consequence of the relief, and not the relief of the expectoration.

In that mild but annoying form of asthma that accompanies the other symptoms of hay fever, and is known as hay-asthma, tobacco pushed *ad nauseum* gives more relief than any other remedy. In a relative of mine who is very much afflicted with this troublesome complaint, tobacco-smooking is the only thing that gives any relief.

During the hay season and all the early hot summer weather, he suffers (besides the sneezing and running at the eyes, and tumid burning of the nose and throat, characteristic of hay-fever) from paroxysms of a wheezing dyspnœa of the true asthmatic type, coming on exclusively at night, so as almost to deprive him of sleep. During the rest of the year he never smokes, as it is disagreeable to him, and in other respects prejudicial; but during this season he is quite dependent on his cigar for any degree of comfort, or alleviation of his symptoms. The following graphic account of the relief he finds from tobacco I cannot do better than give in his own words:—

"There is no remedy during a paroxysm of hay-asthma that has anything like the effect of smoking tobacco; and though this is especially the case in the latter stage of the attack, when the asthmatic element of the phenomena is most developed, still in the earlier stage, when the lachrymation, sneezing, and faucial irritation are most distressing, tobacco-smoke has, in my case, a very marked influence in soothing and diminishing these symptoms.

"No doubt any of these medicines which Dr. Pereira has called '*cardiaco vascular depressants*,' would produce a somewhat similar result; but none is of so easy application, or can be used so readily or pleasantly as tobacco. During the hay asthma season—*i.e.*, in my case, from about the 15th of May, to the 10th or 12th of July, I regularly smoke a cigar the last thing before going to bed, or perhaps more frequently after I am in bed. The effect is, that (excepting during the last fortnight in June, when I never get a night's rest), the sedative influence of the tobacco prevents the occurrence of any asthmatic spasm. If during this period I omit my cigar, I seldom sleep beyond four o'clock; usually three o'clock finds me awake, hopelessly, though generally only slightly, asthmatic for the rest of the night; till, indeed, about nine o'clock, when almost always the asthma completely leaves me. This night-cigar is taken as a preventive. But tobacco will cure the asthmatic spasm when it is fairly on; only it requires a larger dose of the poison, and in a stronger form. The sedative influence of the cigar will usually ensure me a fair night's rest; but the powerful depression of strong shag-tobacco is necessary to cut short the spasm when it is established. Even when I do smoke my night-cigar, I not unfrequently have to get up about three or four o'clock in the morning and smoke; and during the last fortnight in June, this happens almost nightly.

"Distressing as are the sensation of collapse from tobacco-poisoning, they are an unspeakable relief when contrasted with the impending suffocation of asthma. I shall never forget an attack which I once had, and the joy with which I hailed the approach of collapse from tobacco-poisoning. It was late in July many years ago. I had gone into Dorsetshire to stay with a relative in a country house. Immediately surrounding the house were grazing fields—not hay-fields, and they had not been mown. In this field was a grass—*Nardus stricta*, I

think—still blooming luxuriantly; for it is a grass which cattle will not eat; and thus, though past the usual time for hay asthma, I was accidentally surrounded by its most potent cause—grass in flower. The night came, and I had not been an hour in bed when I was attacked with the most violent asthma I ever experienced. There were no cigars in the house; but one of the servants had some rank shag-tobacco. I smoked one pipe, then another; and as my face blanched, and my pulse failed, and the cold sweat stood on my forehead, miserable as were the sensations of collapse, they were Paradise to the agonies of suffocation. I shall never forget those moments of relief.

"The story of this attack of asthma, by the way, is a very instructive one; and I may just add it here, in brief:—I left my friend's house the day after this paroxysm, and went to the sea-side, where I was as usual perfectly well. Two days after, I received a letter from him asking me to return, as he had had the grass in flower about his house cut down. I did so, and remained with him a fortnight, sleeping every night as placidly as an infant. The *Nardus stricta* had given me the asthma: the scythe had cured it.

"To return to the tobacco. A hay asthmatic should never smoke tobacco but for his malady. Smoking should never be to him a habit or a meal, for it then ceases to be a medicine. Indeed, to him it should be a deadly drug, for it is by poisoning that it cures."

Not long ago, I was conversing on the subject of his malady with a surgeon of some distinction in this city who is grievously victimized with hay asthma, and on asking him what he found do him any good, he replied, "Tobacco; tobacco is the only thing; nothing does me any good but smoking;" and he went on to tell me, that whenever he finds his asthma very bad, and that he shall get no sleep without it, he immediately resorts to a cigar. But the smoking does him no good unless it produces a condition of collapse; the mere sedative effect of it is of no use to him whatever; and having lost, from the habit of smoking, an easy susceptibility to tobacco influence, he adopts the following device to secure its more potent effect: he fills his mouth with tobacco-smoke, and then, instead of breathing it out again at once, as is usual in smoking, retains it in his mouth for several seconds, perhaps a quarter of a minute, then takes another mouthful, and so on. In this way, he finds that the tobacco is more rapidly absorbed by the mucous membrane of the oral cavity, and that a state of collapse is speedily induced. The moment the faintness and sickness comes over him, the asthma ceases, he turns into bed, and has a good night.

The effect of antimony nearly resembles that of tobacco, and it acts in the same way, but the nausea and collapse it produces are long and tedious.

Of the three drugs, I should say ipecacuanha is the most manageable, and entails the least suffering; tobacco the most speedy and effectual.

There are one or two practical points on which I would wish to add a few words.

Remedies of this kind given with a view of cutting short the paroxysms, should be given as early as possible, and for two reasons: first, because it is much easier to break through the asthmatic condition when it is but just established, while the longer it is allowed to go on the more inveterate and uncontrollable it becomes, and the more difficult it is to arrest it; indeed its giving way at all may depend on the earliness with which the remedy is applied. I have known treatment powerless after the dyspnœa has continued for some hours, which never failed if administered as soon as it declared itself, Just at starting, in the earliest stages of the paroxysm, a very slight thing will determine its advance or retreat, and in proportion as it advances and deepens, in just such proportion do remedies become inoperative. The other reason is, that if the spasm *does* yield in spite of having been some time established, the recovery is not so complete as if the remedy had been applied immediately on its appearance. The longer the bronchial stricture lasts the greater is the arrears of breathing and the resulting pulmonary congestion; and if this goes on unchecked and increasing for many hours, the disturbance of the vascular balance becomes so great, the capillaries of the lungs so loaded, that it is a long time, many hours, or perhaps even days, before that balance is restored, and the vessels recover their normal condition; and although the bronchial spasm may completely give way, there remains a certain amount of shortness of breath and an incapacity for exertion, and it is not until an abundant expectoration of mucus has taken place, by the pouring out of which the loaded vessels have relieved themselves, that the chest becomes clear and the breathing free. In asthma at once cut short there is no such accumulated congestion—no mucous exudation, and when the bronchial spasm ceases all dyspnœa vanishes. If on first awaking with the sensations of asthma, the asthmatic nauseates himself with tobacco, or smokes his nitre-paper, or keeps himself in a standing posture, or in any other way cuts short the paroxysm, he will be throughout the succeeding day exactly the same, with the exception of the sleep he has lost, as if nothing had occurred; but if he suffers the fight between asthma and sleep to go on long, and then on the first remission of the dyspnœa lies back and goes to sleep, he will protract the asthmatic state, deepen the consequent pulmonary arrears, and not only postpone his recovery for many hours, but make it then slow and imperfect. I know an asthmatic who now never loses a day by his disease, in consequence of the promptitude with which he meets its first appearance in the early morning, but who formerly, from continuing to lie in bed, and trying to get sleep after the asthma had begun, protracted his sufferings through the day. He is attacked as often as ever, and at the same time—about three or four o'clock in the morning, but the moment he finds his asthma on him he takes measures to keep himself wide awake—stands leaning against a piece

of furniture, and, if necessary, induces tobacco collapse, so that instead of a day's asthma he has half an hour's, and, as far as all the engagements of life go, has ceased to be an asthmatic.

It is a difficult thing for the asthmatic, I know, overwhelmed with sleep as he is, and generally with a peculiarly heavy drowsiness upon him, to leave his bed or light and smoke his pipe; but he *must* do it; he must rouse himself fairly up and adopt at once those remedies that in his particular case are most efficacious. In fact, the treatment of the asthmatic paroxysm should be so prompt as to be almost rather preventive than curative: in the treatment of no disease is the injunction "*obsta principiis*" of more vital importance.

One is sometimes asked—Which is the best form of tobacco to use, a cigar or a pipe? I think a pipe has the advantage of more certain strength; cigars vary so much, even the same sort. The tobacco that I generally employ is bird's-eye, as being a mild tobacco, and one by which you run little risk of inducing alarming collapse. *Shag*, or any other of the strong tobaccos, should not be used by the uninitiated, as the collapse they produce is apt to become protracted and unmanageable. For ladies and young children, a few whiffs of a mild cigarette are quite sufficient.

Of ipecacuanha, I think the powder is better than the wine. I never give a very small dose, it is uncertain and teasing. I would say, always give such a dose as will be certain to secure its own prompt rejection. I never give less than twenty grains, however young the patient may be: it never does harm.

But ipecacuanha is a nauseous thing; and especially to those who have frequently taken it as an emetic it becomes almost intolerable. I have lately discovered that it may be taken very pleasantly and very efficaciously in the form of some strong ipecacuanha lozenges made by Messrs. Corbyn, of 300, Holborn. They are about four times the strength of ordinary ipecacuanha lozenges; three of them will produce prompt vomiting. They are very convenient, too, for keeping up a slight nausea; and for children they are invaluable. If vomiting is desired, they should be bitten and ground up in the mouth and swallowed at once.

There is one circumstance that greatly detracts from the utility of tobacco in the treatment of asthma; that practically, indeed, almost destroys it. Our adult male population have so habituated themselves to its use that they have lost the susceptibility to its full influence, and cannot induce complete collapse by any amount of smoking. Now adult males constitute by far the majority of the subjects of spasmodic asthma; and thus the habit of smoking has rendered powerless, in a large number of cases, what I think may, without any qualification, be called its most potent remedy.—*Lancet, July* 24, *Aug.* 28, *Sep.* 11 *and* 18, 1858, *pp.* 86, 223, 279, 302.

25.—ON THE EFFECTS OF LOCAL INFLUENCE ON SPASMODIC ASTHMA.

By Dr. Hyde Salter.

[The following article on the same subject of asthma, although dwelling more particularly on the local influences which cause or relieve the attacks, is so connected with the previous papers that we must introduce it here. The reader however will find that the original article in the 'Edinburgh Monthly Journal' will amply compensate him for the trouble of referring to it.]

The subject of the following paper is a single remedy for a single disease. And it might perhaps be feared that a subject so narrow and circumscribed might be meagre and bald, and fail to recommend itself to the reader's interest. But there are two circumstances that, I think, go far to rescue any therapeutical paper from the unimportance and want of interest that the extreme narrowness of its subject might impart to it—gravity on the part of the disease, and efficacy on the part of the remedy. In both these particulars I hope I shall be able to show that the subject of my communication has strong claims on attention. And there is yet a third circumstance that tends to enhance that claim, and it is, that though the disease is dire and the remedy complete, its very common and striking efficacy has not attracted that attention which it deserves, and which one would have thought it would have claimed.

Spasmodic asthma—by which I mean paroxysmal dyspnœa of a peculiar character, generally periodic, with intervals of healthy respiration between the attacks—although not a very common disease, cannot, in this country, be said to be by any means rare, and I believe that all who direct their attention to it will find it to be much commoner than is imagined. Cases of perfectly *pure* asthma, that is, without the slightest organic complication, are, however, rare, unless they have existed for only a very short time, and for this reason—that asthma, if it is at all severe, and its attacks frequent, cannot long exist without inflicting permanent injury on the lungs, and even on the heart. If in asthma of long standing the lungs and heart remain perfectly healthy and uninjured, we may be sure either that the attacks are very mild, so as to produce but little disturbance in the lung, or that they are very rare, so as to allow ample time for the recovery of the injury produced by one attack before the occurrence of another. But asthma is not the less asthma because it has produced certain organic changes which complicate it; and many cases are primarily and essentially asthma that ultimately become, and are called, Emphysema and Heart-disease.

But not only is asthma not an uncommon disease, but it is one of the direst suffering; the horrors of the asthmatic paroxysm far exceed any acute bodily pain; the sense of impending suffocation, the

agonising struggle for the breath of life, are so terrible, that they cannot even be witnessed without sharing in the sufferer's distress. With a face expressive of the intensest anxiety, unable to move, speak, or even make signs, with the chest distended and fixed, the head thrown back between the elevated shoulders, the muscles of respiration rigid and tightened like cords, and tugging and straining for every breath that is drawn, the surface pallid or livid, cold and sweating—such are the signs by which this dreadful suffering manifests itself. And even in the intervals of health, the asthmatic's sufferings do not cease: he seems well; he goes about like his fellows and among them, but he knows he is altogether different; he bears about his disease within him wherever he goes; he knows he is struck—"hæret lateri lethalis arundo;" he knows he is not sound—he cannot be warranted; he is not certain of a day's, perhaps not even of an hour's health, he only knows that a certain per centage of his future life must be dedicated to suffering; he cannot make an engagement except with a proviso, and from many of the occupations of life he is therefore cut off; the recreations, the enjoyments, the indulgences of others, he dare not take; his usefulness is crippled, his life is blasted; and, if he knows anything of the nature of his complaint, he knows that his sufferings may terminate in a closing scene worse only than the present.

But not only is asthma thus comparatively common and superlatively distressing, but it is peculiarly and proverbially intractable. The asthmatic is generally looked upon as an asthmatic for life, as one who, if he should "suffer many things of many physicians," would be "nothing bettered, but rather grow worse," and the treatment is regarded as palliative. It must be admitted that the remedies for asthma are of very irregular and uncertain operation; that probably there is no single remedy that is not inoperative in a large number of cases; that that which is useful in one is valueless in another, while there are many cases that resist all remedies. If this intractability of asthma were doubtful, the large number of remedies that have been suggested would be a sufficient proof of it.

Now, under such circumstances, any plan of treatment that held out a chance of curing even a small per centage of cases would surely be a great boon. But the number of cases of asthma affected by locality is *not* small, it is very large—the curability of asthma by topographical influences is so frequent, so characteristic, that one might almost look upon it as a part of the disease. Beyond a doubt the influence of locality upon disease is more strikingly illustrated by asthma than by any other disease whatever; in no other case have we such constant, such sudden, such complete results.

It is not my intention, nor is it necessary to my object, to enter, in any degree, into the discussion of the absolute nature of asthma, a description of its phenomena, or a detail of its general therapeutics. My space will be short enough, I know, for me to discuss the single

point to which I wish to direct attention. Let me then at once enter upon its consideration.

I think I cannot introduce it better than by relating the case that first directed my observation to this subject. D. M., a confirmed asthmatic from childhood, came to London at the age of 20. Previous to that time he had always lived in the country, either in a small provincial town or the complete country, and had never been in any large towm. From his infancy his asthma had been gradually getting worse, its intervals shorter, its attacks more severe. The intervals were rarely prolonged; but for a year or two before he came to London they became less regular. He had the characteristic physiognomy and physique of asthma; he was spare, rather high-shouldered, and with a feeble circulation. The only effect of change of air was, that at most places he seemed worse than in the small provincial town in which he resided. and in which he was born. With a view of improving his health, he had been to many places near to where he lived. but none did him any good, and from many he was obliged to return, as he could not breathe in them. He had tried all sorts of remedies,—stramonium, tobacco, opium, lobelia, ether, camphor, henbane, squill, ipecacuan, tonics—in fact the whole list of ordinary asthmatic remedies: but nothing had done him good; and nothing relieved the attacks at all except emetics. He suffered an attack about once a week, and it disabled him for two days, so that hewas ill a third of his time. He was looked upon as a hopeless case; his education was impaired; his prospects were marred; and he came to London to pursue indefinite and preliminary studies, as it was doubtful if he would ever be fit for any profession. No sooner, however, had he come to London, than his asthma ceased—completely, and at once—he had not another attack. And not only had he no regular attacks, but he lost all asthmatic feelings; so that after two or three years he said he had really forgotten what the sensation of asthma was—he ceased to be an asthmatic. He could take any liberties with himself, do anything he liked, without fear—eat what he liked, and when he liked—go to bed and lie flat on his back after a hearty supper; whereas in the country he had never dared eat after two o'clock in the day. He gained flesh; his looks improved; he was able to join in the business and pleasures of others; life became a different thing to him; for the first time he had a future. For thirteen years this effect has continued. He has had occasional reminders, just to show him that the tendency to asthma is not lost—that the disease is "scotched," not "kilt;" and there are circumstances, to which I shall refer by-and-by, to show that it is living in London, and that alone, that keeps his malady at bay.

Such an occurrence as the following is, I believe, not uncommon: I have been told by one physician that he has known several such. An asthmatic resolves to come to London to get "the first advice;" and he comes to town over night, that he may make his visit to the sacred

regions of Brook Street or Savile Row in the morning. But on waking the next day he is surprised, and almost disappointed, to find his asthma gone; for he wanted the doctor to see him when his disease was on him, in order to form a correct judgment of it. So he waits till the next day, hoping he may then be able to show his doctor what his attacks are like; still, to his surprise, no asthma. He cannot think how it can be—London—smoky, foggy, damp, dense London, the worst place in the world for breathing—he would have thought he would hardly have been able to live in it. He waits till the next day, and the next—at last he is tired of waiting, and comes to the agreeable conclusion, that his asthma has taken its final *congé*, and that, like the horse who died just as he had learned to live on a straw a-day, it has chosen to depart of itself just as he was going to get the best advice for it. But no sooner does he get back into the country again than he is just as he was before he went to town. This is more vexatious than anything; so back he goes again to town. But again he is well. And then the light breaks in upon him. Now this, I have been assured by one physician, has happened several times within his own knowledge; and I believe that many cases of asthma have been permanently cured by London residence, from finding, on coming to consult some metropolitan physician, that London air was specific for them.

[Dr. Salter then relates several interesting cases which were much benefited by residence in large towns, and then says:]

Here, then, are three cases—Glasgow, Manchester, Leicester, large manufacturing towns; and I have heard of so many similar ones, that I am convinced that they are but particular instances of a general fact. And there is another curious fact, entirely confirmatory of this view—that it is as a dense smoky city, and not as London, that London cures asthma, and which carries us a step further in our search for the immediate therapeutic agencies at work, and their *modus operandi;* and it is this—that those parts of London, and other cities, that have the city character most strongly marked on them, are those that are most beneficial to asthma—that it is in the most central, densest, smokiest parts, that the most striking results are seen. Take the following very interesting case as an example:—

E. P., a Scotch lady, aged 30, who had been suffering from intense asthma for two years, determined to come to London, in part to consult Sir James Clark, but chiefly expecting to derive benefit from residence in town, in consequence of a case having come under her knowledge, in which a gentleman suffering from most severe asthma had been completely cured by residence in London. She had, in the previous summer, tried the effect of change of air, and had only discovered that the sea air was prejudicial to her, greatly increasing the severity of the paroxysms. On arriving in town she took up her abode in Lombard Street, that she might be in the densest part of

the city; for that, from the history of the case she was acquainted with, was the part in which she expected to receive the greatest benefit. Her expectations were fully realised; she had not a single attack; she suddenly and completely lost them; regained her health and strength, and, from being so weak as to be quite debarred from walking, she was soon able to walk, with perfect ease, an hour at a time. She then made a tour in the west of England—Reading, Bath, Clifton, Leamington, and to the Channel Islands; but throughout this tour she was attacked with her asthma, and got no permanent freedom from it till she came back to London, where she immediately became quite well, as on the former occasion. She waited till her health was recruited by her residence in the city, and then returned to Scotland. She immediately became worse than ever, and passed a winter of most severe suffering. It was then determined that she should come and live permanently in London, as the only thing that afforded a chance of the restoration of her health; and she again returned to the city with the same result as before—perfect cure, restoration to health and comfort in all respects. Soon after this she moved three miles farther west, to the neighbourhood of Cavendish Square, and there, although she enjoyed an almost perfect immunity from attacks, she was not so perfectly well as in the City, into which she used frequently to go for short visits, for what she called "a dose of health." After being a twelvemonth here, in a state of very much improved health, she removed to the neighbourhood of Bayswater, and there her asthma began to reappear, and she had occasional attacks of the old spasmodic type. She was still, however, much better than anywhere out of London. Sometimes she would visit the sea-side or the country, in expectation that the change would be useful to her, but she was always the worse for it. Thus, we may say there were four degrees in which she was affected by local influences—she was better in any part of London than in the country, but in its westerly suburbs she was decidedly asthmatic; in the City she was perfectly well; and in the intermediate situation between these last two, her condition was intermediate. She used frequently to go for short sojourns in the City, and she used to say that even a single day there would do her good. If she was suffering from her asthma at the time, she obtained an entire immunity from it as soon as she entered the City.

I have seen just the same thing in numbers of cases. In the case that I first related it was strikingly shown. That gentleman, when he first came to London, took lodgings on the south side of the river, near Blackfriars Bridge; and a more smoky, foggy, dismal place could not well be imagined: there he was perfectly well. Next he removed to Arundel Street, Strand; and there, next door to the mud and mist of the river, and in an atmosphere of smoke from the factories that cover its banks, and the steamers that swarm on its surface, his breathing was perfectly free. The same in Surrey Street, close by. But when he moved to a clearer and more elevated part of town—

Woburn Place, Russell Square—his old symptoms frequently showed themselves, but immediately disappeared on his moving down to Carey Street, Lincoln's Inn, where he passed six months without, I think, an asthmatic feeling. He was afraid at one time that he would have been obliged to live on the south side of the river—the north side seemed to have lost its efficacy; the air of Arundel Street was too pure for him; and he actually took a bed-room in Stamford Street, on the Southwark side, and slept there two or three nights by way of experiment. He found, as he expected, that he was perfectly well there. The level could have been but a few feet above the Thames, whereas in Arundel Street his room must have been 100 or 120 above the Thames level.

It was to some narrow back street in Manchester that the asthmatic from Nuttsford was advised by his medical attendant to go, and it was in such a situation, the closest and smokiest he could pick out, that he found the locality that cured him.

[Dr. Salter then relates several other most interesting cases, and adds—]

I have now recited the histories of twenty cases, and I think nothing would be gained by multiplying them further. In one point they all tell the same story—sudden and, in almost every case, complete relief, following change of residence from one locality to another. Beyond this point they cease to agree, and indeed offer the most opposite evidence. For while fourteen are only well while breathing the air of populous smoky cities (eleven out of these fourteen cases being cured by London air), seven are unable to breathe in cities, have been driven from them, and are obliged to take up their abode either in the country, or by the sea-side. But this general division into two classes does not anything like express the contrariety that exists between them; the city cases and the country cases differ among themselves in the most varied and irregular way; indeed, there is no end of the apparent caprice of asthma in this respect, the most varied and opposite airs unaccountably curing. Thus, the guard of the Manchester mail was well in Manchester, and in the pure air of the elevated neighbourhood of Leicester, but in Leicester itself he could not breathe; whereas one would have thought, that if Leicester was so much worse than its neighbourhood, Manchester would have been worse still. In some of the cases other city airs, as Glasgow, Leicester, Manchester, have produced the same beneficial effect as London air has in so many others; whereas S. P., who was always well in London, had asthma in Birmingham, Liverpool, Hull, in Staffordshire, at Darton, Darlington, and Newcastle; at the latter place all the time he was there. Take again the case of Captain A. B., which I have not yet related, from the report of which, made by a medical relative of the patient, the following is an extract:—"With regard to climate, Guernsey is not what I could wish for him; it is damp,

mild, and relaxing. He is only well in a dry, bracing climate; either hilly country or sea-side suits him well; and he could break a fit sometimes in Guernsey by leaving home and going to sleep at the sea-side. His house in Guernsey is a mile from the sea, rather in a valley, very thickly wooded all round, and decidedly damp. In Paris, which is pre-eminently dry,—at Bath, which is also dry, he is wonderfully well. London, too, agrees with him, at least the neighbourhood of Pall Mall. A bleak open country, where there are *no trees*, is always sure to agree with him; and a wooded country, especially if low, the contrary."

Here we plainly see the kind of air that offends most—it is that of damp, low situations, abounding with vegetable life; and any air free from these conditions is beneficial, whether sea-side or dry inland. Contrast with this the case of D. M., who, though like Captain A. B. well in London, finds bracing inland airs, such as Bath, the very worst of all for him. Contrast with it also the case of Lord ——, of which Dr. Osier Ward told me the other day, who was obliged, not long ago, to leave London at two o'clock in the morning, and drive in all haste to Epsom, as the intensity of his asthma seemed almost to threaten his life. If Bath and London are both beneficial because they are dry, as Captain A. B.'s case would imply, why are London and Epsom, the one so prejudicial, the other so beneficial, in the case of Lord ——? Again, I find, in notes of the case of the Rev. E. P., that Oxford and Sudbury agree with him, whilst London, Rugby, and Wales are prejudicial—what common characters unite, and what divide these localities? Again, Captain A. B. was well in London, Paris, and the sea-side; Mr. J. B. could not breathe in London and Paris, while Brighton cured him. Again, while I have cited these cases of cure by the sea-side, I know other cases that cannot breathe near the coast.

Often what one may call intrinsic eccentricities present themselves in the same case—an asthmatic stumbles across some remarkable exception to his general experience. Thus D. M. found, to his surprise, on more occasions than one, that Leamington agreed with him perfectly well, though it belongs to a class of localities in which he cannot possibly breathe. Some of the contrarieties I have met with have been very striking and special. Thus, the other day Dr. Camps told me of the case of an asthmatic lady, who, on going to Holloway, became much worse, and was obliged to return to town. Opposed to this I find in my note-book the following case:—"Louisa Uz, aged 5, has had asthma ever since she was six weeks old. She goes to bed well, and is seized towards morning, and the difficulty of breathing is such, that the exertion makes the perspiration stream from her. The circumstances that chiefly bring on the attacks, are excitement, laughing, and exertion. *She has lately been living at Holloway for seven weeks, and while she was there, she was perfectly well. No sooner, however, has she returned to Grafton Street, Soho, where she was before,*

than the difficulty of breathing has come on again. I have advised her mother to take her back to Holloway." But the most curious instance of contrariety in asthma was related to me the other day by Dr. Birkett. He told me he knew the cases of two asthmatics, one of whom could only breathe in London, and the other could only breathe in Norwood; if they attempted to go, the one to Norwood, the other to London, they were stopped on their journey by their asthma, and could not proceed; and, what was very curious, they were both stopped at the same place,—they could neither of them get beyond Camberwell Green, the one in his journey towards Norwood, the other in his journey towards London: there they were stopped, and had to go back. This seems almost like romancing; but the source from whence I derived the account is sufficient warrant for its literal fidelity.

Now, if this is so, if we find such an irregularity and inexplicability in the therapeutical influence of locality on asthma—if we find it defying all management, and thwarting all expectation, what rules can we lay down for the guidance of those who are suffering in their present abodes from this dreadful malady, and have not yet found out where they can breath in peace? Can we lay down any? None, I believe, with any certainty. It is impossible to predict what will be the effect of any given air—the cure is often an inexplicable surprise. This is strikingly shown in many of the cases that I have related. Thus, Captain M., after travelling about from place to place in search of health, stumbled across it on the high ground outside Leicester, and Mr. J. B., after an equally fruitless search, found perfect ease at Brighton. The only approximation to a rule, that I know of, is that referred to by Mr. Macaulay—that that air will probably cure which is the opposite of the air in which the patient is worst. Thus city asthmatics are benefited by seacoast and country—country asthmatics by city air. P. J. found at Blackpool an air the very reverse of that of the smoky manufacturing town in which he was so bad. The first case that I narrated was well in London; worst of all in an air which I consider the opposite to this—the clear bracing air of high chalk districts; and in mild, low-lying places, and in provincial towns, his condition was intermediate. In the Scotch lady who was cured on coming to Lombard Street, the asthma reappeared and became more intense as the air she breathed diverged in its qualities more and more from the city air. I should therefore, on a provincial asthmatic asking my advice, make him try some close part of the city, or the river-side, or a back street in some large provincial manufacturing town that might be nearer his ordinary residence, and therefore more convenient to him. A London asthmatic I should expect to derive the most benefit from the pure air of some open and elevated inland situation, or from the sea-side, at such places as Brighton and Ramsgate.

Some of the differences of air, or whatever it may be, determining

the presence or cure of asthma, appear to be of the slightest possible kind, subtle, inscrutable, and arbitrary. I remember the case of an asthmatic in Dorsetshire, who could breathe perfectly well on one side of a hill, but not on the other, and that quite irrespective of level. If his breathing was at all affected, it immediately became easy when the summit of this hill which was a very low one, was passed—a few yards would make all the difference to his breathing; he seemed suddenly to step out of an asthmatic into a non-asthmatic air. Dr. Osier Ward told me lately of the case of a clergyman, who could not sleep in a house his patron had built for him, while in his patron's house, close by, he was perfectly well. The only circumstance that could apparently account for this difference was, that around his patron's house was a moat, which was immediately under the window of the clergyman's bedroom, so that the air he breathed was probably more humid. My friend Mr, Macaulay, in writing to me on this subject, remarks, "It is surprising how slight a change of locality will affect asthmatics. Mr. C., aged fifty-four, has been asthmatic from his youth, and suffered at times severely; but for the last four years, during which he has lived in the same house, has had no attack. Last week he removed his residence about 400 or 500 yards to a higher spot, but more closely built round, and very near to the exit of a sewer; the third night he slept in his new abode he had an attack of asthma, and is suffering from a repeated attack at this moment." The change of locality here was only a distance of four or five hundred yards, but it was sufficient to light up the disease that had been in abeyance four years. Dr. Watson, in his excellent chapter on asthma, the best. and, for its length, the most complete treatise on the disease in print, gives some remarkable instances of this sensitiveness on the part of asthma of subtle atmospheric differences otherwise inappreciable. "A college acquaintance of mine," he says, "much tormented with asthma, is equally sensible to these inscrutable influences. Two inns in Cambridge are named respectively the Red Lion and the Eagle. He can sleep in one of them, and not in the other. Nay, he is thus variously affected within much narrower limits. He assures me that when in Paris, he never escapes a fit of asthma when he attempts to sleep in the back part of Meurice's Hotel, and never suffers when he sleeps in a front room. Dover Street suits him; Clarges Street does not. He cannot rest in Manchester Square."

[After giving several other cases, and making valuable remarks on them, Dr. Salter finishes his paper by the following conclusions:]

1. That residence in one locality will cure, radically and permanently cure, asthma resisting all treatment in another locality.
2. That the localities that are the most beneficial to the largest number of cases are large, populous, and smoky cities.
3. That this effect of locality depends probably on the air.

4. That the worse the air for the general health, the better, as a rule, for asthma; thus the worst parts of cities are the best, and conversely.

5. That this is not always the case, the very reverse being sometimes so,—a city air not being tolerated, and an open pure air effecting a cure.

6. That there is no end of the apparent caprice of asthma in this respect, the most varying and opposite airs unaccountably curing.

7. That, consequently, it is impossible to predict what will be the effect of any given air, but that probably the most opposite to that in which the asthma seems worst, will cure.

8. That some of these differences determining the presence or cure of asthma appear to be of the slightest possible kind, arbitrary and inscrutable.

9. That the mere conditions of locality appear to be adequate to the production of asthma, in a person whose disposition to it was never before suspected, and who probably would never have had it had he not gone to such a locality.

10. That, consequently, many healthy persons, who never have had asthma, and never may, probably would be asthmatics if their life had been cast in other localities.

11. That *possibly* there is no case of asthma that might not be cured if the right air could only be found.

12. That the disposition is not eradicated, merely suspended, and immediately shows itself on a recurrence to the original injurious air.

13. That change of air, as change, is prejudicial.

14. That, from the caprice of asthma, the constancy of the results in any given case is often deranged.—*Edinburgh Med. Journal, June* 1858, *p.* 1092.

26.—ON THE INFLUENCE OF SOLIDIFICATION OF THE LUNG UPON THE VOCAL VIBRATION.

By Dr. George Johnson, Physician to King's College Hospital, and Professor of Materia Medica and Therapeutics in King's College.

Until within the last few months I have been in the habit of considering that, as a rule, the vocal vibration or fremitus over solid lung is greater than over the corresponding part of the healthy lung, and that the exceptions to this rule are rare; further, that in this sign we have a valuable means of distinguishing between solid lung and liquid in the pleura, the vocal vibration in the latter condition being invariably diminished.

I believe still, and in most cases, there is increased vocal vibration over solid lung, but I think that the exceptions to this rule are more numerous than is commonly supposed; and I have been led to this opinion by finding that out of twelve cases of pneumonia which have

occurred in my hospital practice during the last eighteen months, in three there has been decided *diminution* of the vocal vibration over the hepatised lung; while in two others the vibration was neither increased nor diminished, as compared with the corresponding part of the opposite side.

The vocal vibration over solid lung is by no means uncommonly diminished, and it is evident that the diagnosis between solid lung and liquid in the pleura is often but little aided by a comparison of the vocal vibration on the two sides of the chest.

It has occurred to me on more than one occasion to find that pneumonia of the lower lobe of the lung has been mistaken for pleurisy with liquid effusion, a mistake which is the more likely to occur when there is diminished vocal fremitus over the solidified lung. There is one help towards a correct diagnosis in cases of this kind, which has, I think, been too little regarded by those who have written on the subject. In percussing the chest, we should bear in mind the form and limits of the lobes of the lung, and ascertain whether the extent of dulness corresponds with the outline of one or other of these lobes. If this be found to be the case, the probability is, that the dulness depends on solidified lung, and not on liquid in the pleura. Take, for instance, a case in which the lower lobe of the left lung is hepatised. It will be found that while percussion over the back of the chest elicits a dull sound from the spine of the scapula downwards, in front there is the natural resonance, and the lateral region is partly dull and partly resonant; the boundary line between the dull and the resonant part extending obliquely downwards and forwards from just below the spine of the scapula, in the direction of the fissure between the two lobes of the lung. It can rarely, if ever, happen that liquid in the pleura is so circumscribed as that while it extends as high as the spine of the scapula at the back, it will leave the front of the chest normally resonant when the patient is in the erect posture. When the upper lobe alone of the left lung is solidified, the line of demarcation is the same as in the other case, but the dull and the resonant parts are reversed. The middle lobe of the right lung, extending in front from the mamma downwards, may be inflamed and solidified alone, or it may be affected at the same time with either the upper or the lower lobe.

My object in the present communication has been to direct attention to three practical points relating to the diagnosis of pulmonary disease. 1st. That the vocal vibration is not unfrequently diminished over solid lung. 2nd. That when the *lower* lobe of the lung is solidified, the vocal vibration over the *upper* lobe of the same side, is sometimes remarkably increased. 3rd. That in percussing the chest, when the question of diagnosis is between solid lung and liquid in the pleura, it is important to remember the exact form and position of the several lobes of the lung.—*Archives of Medicine, No. II., p.* 76.

27.—*On the Production of Pulmonary Consumption in Persons who work in a close and confined Atmosphere.* By Dr. Guy.—The report on the sanitary condition of the army recently published proves that our soldiers, but especially the infantry of the line and the foot guards, are subject to a very high mortality, a great part of which is attributed to pulmonary consumption. It is assumed in the report that this excess of mortality from consumption is traceable, at least in part, to the narrow space allotted to the soldier in the barrack and guard-rooms: but as no proof of the dependence of pulmonary consumption on this cause is given in the report, it may be useful to re-publish, from my evidence laid before the Health of Towns Commission in 1844, the following table based upon measurements of the offices of letter-press printers, and the number of compositors working in them, together with the answers to certain simple questions addressed to the men themselves.

	Number per cent. Spitting of Blood.	subject to Catarrh.
104 men having less than 500 cubic feet of air to breathe . .	12·50	12·50
115 men having from 500 to 600 cubic feet of air to breathe .	4·35	3·48
101 men having more than 600 cubic feet of air to breathe . .	3·96	1·98

It is scarcely necessary to add that the number of compositors who answered my question, Had they ever spit blood? in the affirmative, would correspond very closely to the number actually suffering under consumption; just as the number stating that they were subject to colds would afford a good indication of the number in the three classes who were predisposed by the same close and confined atmosphere to suffer by exposure to the common causes of diseases of the chest.

I am the more anxious to re-publish this table, as I believe it to be less known than its bearing on the solution of an important sanitary question would seem to require.—*Archives of Medicine, No. II., p.* 88.

28.—ON BLEEDING IN PNEUMONIA.

[After an extended but masterly examination of evidence on this subject from recent writings by Professors Alison and Bennett, of Edinburgh, Doctors Watson, Gairdner, Joseph Bell, and W. D. Markham, the main object of this article is arrived at, the treatment of pneumonia, more especially the bad and good effects of its treatment, by practising and abstaining from bleeding. Early and repeated bleedings were in fashion with Cullen, and there is no doubt but that under it the strong may generally recover, and that speedily

and well; but in the case of the aged, the weak, the destitute and drunken,—the inhabitants of crowded cities—the practice was appallingly fatal.]

The "heroic practice," not long since the fashion in this kingdom, of abstracting several pounds of blood at one time, if performed only once, and that soon after the onset of the fever, seems to be less injurious than smaller bleedings frequently repeated. Dr. Macintosh, as we have already seen, took fifty-six ounces of blood at once, and hints that others had abstracted seventy or eighty; and Mr. Lawrence also, speaking in 1836, actually drained "a slender young girl" of an ounce or two more than three pounds of blood, two or three hours after being attacked with supposed inflammation of the chest!

Many robust persons have the wonderful faculty of speedily making fresh blood after large and repeated bloodlettings; but others apparently as strong are not so fortunate. They remain bleached, weak, and nerveless, fall into fresh attacks of a low form, or into consumption—either finally fatal, or hang on for years with the mere remnants of their former strength. Dr. Macintosh informs us of one man who lost 192 ounces. Several months afterwards he was weak and miserable, and it appeared very doubtful that he ever could regain his health. The same physician had seen several cases in which great injury was inflicted by very large bleedings, the continuance of dyspnœa, which increased after each abstraction of blood, having misdirected the medical attendants. One patient was on the brink of the grave, with a pale sunk countenance and cold extremities. The strongest stimulants were administered along with large opiates. All these cases eventually recovered.

A first or even a second bleeding rarely or never produces an injurious effect on cases of pneumonia, unless the disease is of a low type or in an advanced stage, or the constitution is deteriorated by old age, destitution, drunkenness, or disease,—especially Bright's disease.

The physiological causes of the injurious effects of repeated bloodletting in pneumonia, more particularly of the low form, are many of them understood. Repeated bleedings lessen the red corpuscles, but not the fibrin. The thinned blood, with its excess of fibrin, tends therefore to exude more readily into the air-cells, and hence the pneumonia, from being single may become double—from centering itself in one lobe, may diffuse itself over the whole lung. This especially applies to later and more repeated bleedings. The tension of the blood in the vessels leading to the affected capillaries is rendered inadequate and oscillating under the diminished amount of the fluid and the lessened force of the right ventricle. Consequently the proper renewal of the circulation through the affected portion of lung is checked, the supplies and vital force necessary to enable the exudation to go rapidly through its stages to suppuration and evacuation are lessened, and the restoration of the respiratory functions are dangerously delayed. These are the very dangers that render the disease so formidable when asthenic.

Dr. Bennett has stated the ascertained and some of the probable changes which take place in the exudation during its various stages with great clearness.

But we must now put the important question, What are *the good effects of bleeding* in pneumonia? Have we not neglected its employment of late years too much?

Dr. Gregory bled a man, admitted early in the disease, with hot skin and intermittent pulse, to sixteen, and again in the evening of the day of admission, to eight ounces, with the effect of carrying off the fever, moistening the skin, and promoting the expectoration. All are agreed that early venesection reduces the fever, relieves the oppression, and often lessens pain for a time, though it does not stop the progress of the disease.

Wunderlich has recently employed the bleeding and the expectant plans in two series of parallel cases. He found that when the fever rapidly disappeared, the convalescence was quick and recovery complete; when the fever was prolonged, the process of exudation was slow, the augury bad, convalescence often incomplete, and ending sometimes in induration or tuberculization of lung. Bloodletting shortened the fever, lessened the danger, and hastened the favourable result, the mortality being 1 in $15\frac{2}{3}$. On the expectant plan the fever was prolonged, the convalescence delayed and unsatisfactory, the result often fatal, the mortality in 76 cases so treated being 1 in $5\frac{11}{13}$. Local bleeding and spontaneous hemorrhage, as from epistaxis and menstruation, shortened the fever and improved the result, but not to the same extent as venesection. The fatality in 114 cases that lost blood generally, locally, or spontaneously, was one in $12\frac{2}{3}$. We are unable to scrutinize Wunderlich's inferences, as we want the age, extent of disease, time of the attack, and other important details. Wunderlich has quite a genius for subdivision; he classes his patients into six classes, according to the rate and completeness of the cessation of fever; he classes his treatment into—expectant, with local bleeding, with general bleeding, with spontaneous bleeding, and he subdivides some classes accordingly as they are treated with or without tartar-emetic and digitalis. Then, after docketing his patients and his plans in this bureaucratic way, he sets off the cases under one treatment, each in one or other of the six classes of "*defervescenz*," with exact precision, case for case against the cases under another treatment, and thinks himself able to take the rule and measure of these complex vital changes in living beings, just as if he had them oscillating in his chemical balance, and weighing against each other even to the one-thousandth of a grain. We look upon this as merely the extravagance of over-refinement. The mind fixed on all these minute self-created subdivisions loses sight of the great vital differences of each case from all others, and forgets that there is a natural difference in each as to severity, fever, duration, and convalescence, that overrides all minor

differences of treatment. We should have esteemed Wunderlich's researches more if they had been larger in spirit and more practicable in aim. We consider, however, that his results are decidedly favourable to the judicious and moderate employment of venesection.

The records of pneumonia, both in this country and on the continent, teem with cases in which bloodletting when performed early and in the stage of fever, lightened oppression, released the breathing, cooled the skin, quieted and softened the pulse when hard, or rendered it fuller when depressed, somewhat mitigated the pain, and gave general and grateful relief. These good effects are not, however, permanent, though the fever and oppression rarely retain their prime intensity. It must not be forgotten that the disease is a reality, and must pass through its natural stages to a favourable issue, or the reverse. It is never really "jugulated" by the most heroic bleeding, but the augmenting distress and the intensity of the fever are subdued by it. No one has proved that the mortality has been increased, or mischief done by a single or even a second early moderate bleeding, in sthenic pneumonia affecting young and healthy persons.

The relief afforded by early bloodlettings has been too great a temptation to the physician when he found the distressing symptoms resuming their sway. He had the power of again giving certain relief in his hands, and it was natural that he should use it. But in doing so again and again, as we have amply proved, he paid dearly for present relief by future mischief, and even destruction.

But because of the certain evil of repeated bleedings, are we to withhold the certain relief of an early bleeding in sthenic cases, especially when we find no proof whatever that it has done mischief, and numerous evidences that it has done good? The evidence in favour of such relief is immeasurably strengthened, when we find that seven-eighths of Bouillaud's cases did well, although they were treated on the inexorable plan of indiscriminate bleeding *coup sur coup*—whether in the young or old, the strong or weak, the sthenic or asthenic case. What are the physiological reasons for or against a single early bleeding for a sthenic pneumonia in a healthy subject? During the early period the channels for the flow of blood through the lungs are narrowed. Now the lungs are like no other organ. You cannot divert from them one drop of the blood circulating throughout the system. The only way in which you can accommodate the circulation to the bloodvessels, is by abstracting blood from the mass, and so lessening its total volume. But this only applies to early venesection, which we should feel called upon to perform, on the grounds just established, whenever there are great tightness, dyspnœa, and fever in sthenic pneumonia occurring in robust young persons previously in good health. Dr. Bennett himself sanctions small and moderate bleedings directed to palliate certain symptoms, and especially excessive pain and dyspnœa.

Local bleeding, whether by leeching or cupping, has at all times

been employed in pneumonia. Dr. Bell treated 71 cases of pneumonia in the Glasgow Infirmary: 36 of them he bled without the loss of a single patient. Venesection was performed in only two of the cases, but four had been bled before admission; the remainder were bled locally—chiefly by cupping. The local bleeding was preferred to the general, because the majority of them had passed into the stage of exudation. He, in fact, bled the sthenic cases only, and with the exception of four in the second stage, those exclusively that had not overpassed the first stage.

Experience has shown that while early venesection often removes tightness in the chest and dyspnœa caused by the pneumonia, local bleeding relieves pain in the side caused by the pleurisy. According to the predominance of oppression on the one hand, or pain on the other, ought general or local bleeding to be preferred; the former for the pneumonia itself, the latter for the attendant pleuritis.

Local bleeding is found to exhaust less, in proportion to its effects, than venesection. It may be safely employed, too, at a later period of the disease; and after general bloodletting can no longer be practised with safety, cupping or leeching may be resorted to.

Local bleeding is also less injurious than venesection in cases of an intermediate character between the asthenic and the sthenic. It ought to be employed with caution or not at all in secondary pneumonias, in cases of a decidedly low type, in the later stages of the disease, and in very old persons.

The *good effects* of *abstaining from bleeding* may be inferred from what has just been said with regard to the bad and good effects of bloodletting.

Dietl treated 380 cases of pneumonia: 85 by venesection; 106 by tartar emetic; 189 by diet only. The mortality was 1 in 5 among those bled; 1 in 13½ among those treated by diet only. At a later period, Dietl treated 750 cases without bleeding, when the mortality was 1 in 10·8. Although he has given in the summary a great deal of elaborate detail as to the cases, showing the sex, age, and constitution; the previous ailments; the duration of the premonitory stage, fever, and convalescence; the situation and extent of the disease; the amount of dyspnœa, cough, and expectoration; the state of the urine; the complications; and season; yet he has only given information as to the death, in relation to complications, sex, season, and character of hepatization. We are unable, therefore, to compare his returns with those of Pelletan, Briquet, and other partisans of repeated blood-letting.

Although these deficiencies prevent us from making strict comparative deductions as to Dietl's cases, yet we are able to say that the proportion of aged persons was up to the average, and that the number of complications was unusual. We consider that the comparatively small mortality in Dietl's cases is owing to the non-bleeding of aged, weak persons, of cases of double pneumonia, of those

admitted long after the onset of the disease, especially of cases of a low type.

Dr. Bennett's treatment, which was without bleeding, and was directed to further the natural progress of the disease, has been very successful, the mortality being only 1 in $21\frac{2}{3}$. The patients were comparatively young, the average age being thirty-one. 10 only out of 65 presented complications, including the 3 deaths. In this respect Dr. Bennett's cases approximate to those of Bouillaud, Chomel, and Louis, and they were apparently at a disadvantage in this respect when compared with Dr. Bell's cases, seeing that Dr. Bell does not state that any of his were complicated, and that he specially excluded those associated either with phthisis or Bright's disease. Dr. Bennett also excludes seven fatal complicated cases, "in which, as the result of chronic, cerebral, cardiac, renal, or other pulmonary disease, such as phthisis, pneumonia appeared before death." The contrast in this respect between Dr. Bennett's and the London Hospital returns is very great, seeing that while one-half of their cases were complicated, only one-sixth of his were so. It is remarkable, and something more than a coincidence, that during the years 1855 and 1856 the cases of pneumonia admitted into the Edinburgh (Dr. Bennett's), Glasgow (Dr. Bell's), and Aberdeen infirmaries exhibited a very small proportion of deaths. The diminution in the mortality in Aberdeen was rapidly progressive, the deaths being 1 in 2·7 in 1853, 1 in 5 in 1854, 1 in 10 in 1855, and not one out of 18 cases in 1856. There is no reason to think that the treatment was materially modified during that period; and we may consider it as proved that in Aberdeen at least, the tendency to death from pneumonia was nearly four times as great in 1853 as in 1855, and more than that in 1856. It may be almost inferred that in the three principal towns of Scotland pneumonia exhibited a remarkable tendency to get well during the years 1855 and 1856, and that the non-bleeding plan of treatment pursued by Dr. Bennett in Edinburgh, and the mixed plan by Dr. Bell in Glasgow, were equally and remarkably successful. While, therefore, these facts do not detract from the great credit due to Dr. Bennett for the judicious and, at all events, successful management of his cases, it must be admitted that the returns presented by himself on the one hand, and by Dr. Bell on the other, cannot be set on the same parallel of comparison with the cases treated either with or without bleeding in Paris, Vienna, Leipsic (Wunderlich), Milan, or London.

From the great similarity of the usual type of pneumonia in Edinburgh and Paris, we are entitled to compare Dr. Bennett's non-bleeding practice with Chomel's and Bouillaud's plan of repeated bleeding, and here we have a striking proof of what we have again and again urged—the destructive effect of that plan on the aged and on those having double, extensive, or asthenic pneumonias. Dietl's cases may also be brought into the comparison, although they are of a

somewhat lower type, and more often complicated than the Paris cases. Dr. Bennett had 11 cases of uncomplicated double pneumonia, all of which recovered. Bouillaud and Chomel, on the other hand, lost almost one-half of their double pneumonias. Dietl gives the number of patients affected with double pneumonia, but not the number of deaths. We cannot therefore, in this respect, compare his returns with theirs, but we can in relation to the proportion of fatal cases presenting red and grey hepatization. The proportion of red to grey in Dietl's deaths was 1 in 6, in Bouillaud's and Chomel's they were equal. Hence we infer that, under the treatment by repeated bleeding death was hastened in several of those cases that had not passed from the red to the grey stage.

We may consider it to be proved that the non-bleeding treatment is much more successful than the indiscriminate employment of repeated venesections.

One of the most important good effects of refraining from bleeding in pneumonia, claimed for it by Skoda, Dietl, and all its advocates, is the comparatively short convalescence of the patients and their rapid return to vigorous health.

The result of non-bleeding in pneumonia in the Vienna Hospital in 1856 was very *unfavourable*, the deaths being 1 in 4 among the males, 1 in 2·7 among the females. Only a few of these cases were bled. It is to be inferred that fewer of the asthenic cases, especially among the aged, died than would have been the case if they had been bled repeatedly, or even at all. When we deduct this favourable set-off, we are compelled to infer that the mortality was greater among the sthenic cases than it would have been under a discriminating plan of moderate early bleeding.

While, then, the non-bleeding plan has a demonstrable advantage over that of indiscriminate and repeated bleedings, we maintain that the discriminating practice of moderate early bleeding, general or local, in cases of more or less sthenic pneumonia, and of refraining from it altogether in asthenic pneumonia, whether as regards the character of the disease or the constitution of the patient, is pressed upon us both by experience and science.—*British and Foreign Medico-Chirurg. Review, July* 1858, *p.* 34.

29.—ON DIPHTHERIA AND ITS TREATMENT.

By Dr. Thomas P. Heslop, Physician to the Queen's Hospital; Professor of Physiology, Queen's College, Birmingham.

[The treatment of this disease, lately so prevalent over a large portion of this country, appears to have hitherto baffled every therapeutical method of treatment ordinarily acted upon. Some time ago the idea first struck the author that probably the tincture of the muriate of iron would be found beneficial.]

On reflecting upon the striking alliance of this pestilence with erysipelas, its characteristic tendency to early and profound adynamia, the frequency of severe and often fatal hemorrhages, and above all, upon the utterly futile nature of the measures generally employed in its relief, whether derived from traditional medicine or from more modern sources, I felt more and more convinced of the probability of benefit accruing from the administration of that powerful drug. Further reflection upon the nature of the local treatment most in favour in this country, and apparently, almost exclusively in vogue among the French physicians, led me to the opinion that strong solutions of the mineral acids, and pre-eminently of hydrochloric acid, would be found infinitely more serviceable than the all-popular solution of nitrate of silver. Valuable as this latter agent unquestionably is in the ordinary sore throat, erysipelatous sore throat, angina variolosa, scarlatinal angina, and numerous other modifications of this common malady, it had appeared to me in numerous cases of the membranous angina to be worse than useless. The caustic solution is only useful when it can be brought into immediate contact with the disordered membrane and vessels. And there are obvious chemical objections to its application, to which the hydrochloric acid is not amenable. This latter acts at once as a solvent of the exudation, and as a most penetrative alterative upon the morbid structures. The former can operate no important change in either point of view in this disease; but who does not recognise that the restricted sphere of action of the lunar caustic is one of its peculiarities—one of its merits? The mineral acids in a very dilute form have been employed, time out of mind, in sore throats; and at various intervals, in considerable strength, by some practitioners; but its systematic application in or about the strength of the London Pharmacopœia, to the fauces and buccal membrane in diphtherite, appears to have been nearly altogether neglected, in favour of a measure which, both upon theoretical grounds, and from very extended observation, I feel well convinced has no pretensions to be styled a remedy in that affection.

Opportunities soon occurred to me of putting my views into practice. The results of my trials surpassed my expectations. I had no longer to tell my pupils of the futility of all efforts to cope with this newly resuscitated pest, when it assumed a really severe aspect. I no longer entered the consultation room with the sentiment that the conference would only end in the display of the weakness of the medical art. I frequently communicated my success to my brethren, and earnestly besought them to give a trial of the method, conjoined with which I advised the systematic and persevering administration of alcoholic stimuli and other similar agents. In the middle of December I thought it right to bring the whole subject under my clinical class at the Queen's Hospital, and it has gratified me to find that the lecture proved of service to the friends of my pupils elsewhere, to whom the facts were communicated. In January I brought the therapeutics of

angina membranacea before the Medico-Chirurgical Society of Queen's College, and adverted to the singular retrogression in our knowledge of this disease, as it appeared in this country. Though so little known now, it was well understood and admirably described by several British authors a century ago, and by none more ably then by Fothergill. In a number of the 'Lancet,' early in December I think, a surgeon near London reported two cases, treated mainly by the steel tincture, which recovered. I doubt not others have administered, in sheer despair, like myself, the same remedy; but its value is not generally appreciated, and is by most persons denied.

My great fear is, that this method of treatment will be extravagantly lauded, that it will be called by the ignorant specific, and that, on the occurrence of fatal cases under its use, as is inevitable in so virulent a disorder, it will be consigned to the limbo where so many other therapeutical abortions have been thrown. I have been informed of two or three cases in this town where the steel is said to have been administered, but proved inadequate to prevent a fatal termination. I know not what other measures were employed in these cases, or in what doses the tincture was given, but I can very confidently aver that I have had no unsuccessful case since I became aware of the value of this medication. It is of great importance to commence at once the treatment, and persevere to the end, not desisting when the exudation has disappeared, but continuing it until the prostration has given way to the vigour of returning health.

I have given in this disease to an adult about 25 minims of the London tincture of sesquichloride of iron every two, three, or four hours, and have conjoined a few drops of dilute hydrochloric acid. I have also applied daily, sometimes twice a day, by means of sponges, a solution of hydrochloric acid, but little weaker than the dilute acid of the 'London Pharmacopœia,' and have always enjoined the regular use of weaker gargles of the same acid. This, with the constant administration of stimulants, beef tea, milk, and jellies, has constituted my treatment, and I repeat here what I have already stated in other quarters, that since I have become aware of the value of this medication, nearly ten months ago, I have not lost one case.

I believe it will be found of the utmost service to imitate every branch of this treatment in puerperal fever, with the exception, perhaps, of the stronger hydrochloric acid application. But even of this exception I am doubtful. So far as I know, obstetricians have never made an ocular examination of the walls of the vagina and uterine neck in puerperal fevers. And there are, unquestionably, good reasons for interfering as little as possible with these parts, under such or any conditions. Yet it is likely to be of great value, both in reference to diagnosis and treatment, could we become assured of the presence of diphtheritic exudation here. Under such circumstances I should not hesitate to treat the vagina with as little cere-

mony as the fauces, and boldly apply to its walls the dilute acid, as before mentioned. It must be remembered that the subsequent decay of these nitrogenous materials, exposed to the conjoint influences of air, heat, and moisture, is a fruitful source of the putrescent fœtor so well known in the chamber of the diphtheritic and puerperal patient, and assumes the highest importance when considered in relation to the possible resorption of these noxious substances.

But, at all events, whether the fluids trickling from the vagina or stagnating in that passage arise from the débris of the uterine walls, an actual exudation on their inner surface, or as I believe in many cases, from these combined with aplastic deposits on the vaginal walls — I entertain the opinion that weak injections of hydrochloric acid at frequent intervals, and administered by a competent person, with effective instruments, will be found a valuable aid to the obstetrician. I may be permitted to observe that solutions of nitrate of silver are likely to be of as little service here as I have found them to be in the analogous affection of the throat. They should be discarded from the treatment of these disorders.

Let me urge that the experimenter should dispel from his mind all notions of heat of skin, thirst, loaded tongue, being antagonistic to the employment of the steel tincture. I have had abundant evidence that these, with delirium and other serious symptoms more or less connected with the febrile condition, in no degree contra-indicate its use. On the contrary, all these symptoms have yielded in diphtheria, and, as is notorious, in erysipelas, with a rapidity which has surprised me. The remedy must be administered with unflinching hand, and must be steadily persisted in until the case terminates in well-established convalescence, or the contrary.

I fear that the suggestion of a preparation of iron in a febrile disorder will raise grave doubts in the minds of most persons who have not given some reflection to the subject. To them I would say, is not erysipelas a pre-eminently febrile disorder, foudroyant in its character, formidable and sudden in its onset, more like some of the worst forms of puerperal fever, in this latter point of view, than almost any other disorder? And yet no one who has given a trial of this particular preparation in the former affection entertains a doubt that its use is one of the most valuable gifts of modern inquiry.

I caution my readers against the opinion, so likely to be entertained, that this is an iron preparation merely. I do not know that any other salt of that metal could be substituted for it. Everything is against such a supposition. We are too apt to imagine the base of a given salt to be the sole source of therapeutic power in that salt, though it requires but little acquaintance with pharmacology to become convinced that bicarbonate of potash, nitrate of potash, and iodide of potassium, respectively possess qualities which render the substitution of any one for another generally impossible. But, again,

the particular preparation in question is allowed to be productive of effects which may be fairly termed peculiar to it. Two especially may be here alluded to—namely, that produced by its administration in spasmodic stricture of the urethra, and that resulting from its employment in certain forms of aneurism. We are unaware, at present, of any other iron compound that can be substituted for it, in these conditions.

On these grounds, very briefly entered upon, I ask my brethren who enjoy the requisite opportunities, to seek to combat, by a safe though powerful agent, a disease which may still be with propriety termed the scourge of lying-in-hospitals, and the terror of private families. If it shall prove ineffective, it is in the highest degree probable that it will not prove injurious, and such an experiment cannot, at all events, be fairly subjected to the charge that it prevented the administration of medicaments of such recognised utility that the chances of the recovery of the patient were appreciably diminished by such a proceeding.

I shall add but a few words upon the treatment of some forms of iritis. It is well known that there are cases of this disease occurring in the syphilitic state and in various asthenic conditions of the organism, which either primarily forbid the employment of mercury, the grand remedy, as at present taught, for fibrinous exudation—or which happen to arise during or soon after full mercurialism has been induced, and, therefore, contra-indicate, *ipso facto*, the further use of that drug. It is hardly necessary to state that it is in these conditions turpentine has been found so valuable—a fact of great interest in reference to the previous portion of this paper.

Eight or nine years ago a patient was admitted into the General Hospital of this town, labouring under aggravated syphilitic lepra. He was treated with mercury, until its full constitutional effect was produced. The eruption disappeared, but an intense iritis almost immediately supervened. He was now placed upon turpentine, which realised all that its most ardent advocates have declared. The exudation was absorbed, and the integrity of the eye maintained. The patient subsequently became afflicted with one of the most severe phlegmons below the deep fascia of the neck which I have ever seen. But he finally escaped with his life, and with health apparently fully restored.

Now it is in such cases as this that I should push the steel tincture with the utmost freedom. I anticipate the greatest advantage from its use. The exudation may be got rid of, I believe, and the mercurial anemia combated at the same time.

I have recently observed the disappearance of the fibrinous film from vesicated surfaces in a case of diphtheria, and the complete arrest of its production under the use of this remedy, in the course of forty-eight hours after its first administration.

It is probable that there are cases of diphtheritic iritis having no

connexion with any other infection, just as Von Gräfe has so ably proved there are cases of diphtheritic ophthalmia of an epidemic character, as lately observed by that distinguished ophthalmologist in Germany. Reasoning from my experience of the more common forms of the infection, I should imagine that the treatment above indicated would be found here of great value.

In conclusion, I beg my readers to enter upon a course of observation of the points alluded to, without prepossession, other than that which is inseparable from the human mind in its pursuit of truth, and to favour their brethren with a conscientious record of the results obtained.—*Med. Times and Gazette, May* 29, *and Dublin Quarterly Journal, Aug.* 1858, *pp.* 552 *and* 65.

30.—ON DIPHTHERIA, OR DIPHTHERITE.

By David Thompson, Esq., Launceston.

About three years since, this neighbourhood was visited by an epidemic of this disease. The first cases occurred in the town; and no others then appeared for several months, when it again broke out in the district north of this place, where it prevailed for several months; whilst the south side was comparatively free from it. From the north it gradually spread, until the whole line of country had been visited by it. There appeared to be no difference in the geological nature of the country, the level, or the aspect, in increasing the severity, or granting an immunity from the disease. The promonitory symptoms varied somewhat. A few retired to rest comparatively well, and awoke in the morning with the throat sore, and covered with white deposit. In the majority, it was preceded by all the ordinary symptoms of pyrexia, of which headache was one of the most severe; followed in the course of a day or two by the usual throat symptoms. An extreme feeling of depression, not to be accounted for, by the amount of mischief in the throat, was a characteristic symptom in each case. An external examination of the throat showed the tonsil generally to be swollen, hard and tender to the touch; whilst sometimes the parotid gland participated in the swelling. Internally, the tonsil was swollen, and either covered with the diphtheritic deposit, which frequently extended over the pharynx, and sometimes into the nares and palate; or else it would be scooped out into an ulcer, with raised violet coloured edges; the floor exhibiting a dark ash-coloured slough. In some instances there would be no deposit or ulceration at first, but simply the tonsil painful and enlarged. These cases generally changed for a state of ulceration, which began in several distinct spots, and gradually spread over the whole tonsil. In the most severe examples, the tonsil sometimes sloughed *en masse*. I saw one instance in which this occurred, in an early stage of the disease; and where now (two years since it occurred)

a cavity remains, capable of containing a pigeon's egg, across the surface of which extends a small band of mucous membrane, which did not slough at the same time, and gives great inconvenience, from retaining the food impacted in the hollow during deglutition.

I have seen no case in which I could detect the extension of the disease into the œsophagus: but in many it has entered into the air-passages. this being the most frequent and most fatal complication. Of 485 cases that came under my own observation, the instances in which the air-passages became involved in the disease amounted to fifteen; and of this number eleven died, the greater number within a few hours after the first symptoms of croupy breathing began. The false membrane formed on the tonsil and pharynx extended into the larynx, trachea and frequently far into the minute divisions of the bronchi. In one instance, a girl, aged 17, expectorated, within twelve hours after the first symptoms of croup made their appearance, a complete cast of the larynx, trachea, and bronchial tubes, extending to the fifth division of the bronchi; in a few hours afterwards, a fresh membrane formed, and she died from suffocation.

In many instances, I saw numbers of minute casts expectorated from the lungs, while at the same time a stethoscopic examination gave all the symptoms of capillary bronchitis. A gentleman, aged 46, died from this condition of the lungs. His throat was first affected. After a few days, the breathing became impeded, with all the ordinary symptoms of capillary bronchitis in the first stage; the throat continuing to improve. He gradually sank, constantly expectorating casts of the small tubes, precisely similar to the deposit in the trachea.

I kept accurate notes of 125 of the most severe cases, including all the deaths.

	Cases.	Deaths.
Males	55	9
Females	70	4
Totals	125	13

The deaths, with two exceptions, were all below fifteen years of age; and, with two exceptions, were all from affections of the air-passages. In the two who died from other causes than affections of the air-passages, death occurred in one from the sloughing of a blister, applied for three hours to the upper part of the sternum; and in the other from extreme debility remaining after recovery from croup. There was a very remarkable tendency for blistered surfaces to take on unhealthy action; and I frequently saw the irritated surface covered with a deposit, similar to that on the throat.

A strong similarity appears to exist between this disease and scarlet fever—so strong, as almost to lead one to hazard the opinion that it may be a modification of that disease. The following are the reasons for considering so :—

1. Diphtherite prevailed in this neigbourhood as a contagious (?) epidemic at the same time as well marked scarlet fever, and chiefly among children.

2. In the same house, the father and mother had well marked scarlet fever severely, without any ulceration or deposit on the throat: while the three children had all the marked symptoms of diphtherite, without much feverishness and *no rash*, though attended by the same premonitory symptoms. The cases occurring at the same time.

3. In many instances, cases of apparently pure diphtherite were, after some days, attended by a rash, that seldom remained more than a few hours.

4. The disease in most instances commenced with all the symptoms of fever, its duration being similar to that of scarlet.

5. In cases of apparently pure scarlet fever, the throat became, after a few days, covered with a diphtheritic deposit.

6. The sequelæ of the two diseases nearly resembled each other. Albuminous urine, with casts, being present in eight cases of diphtherite; and anasarca proving fatal from convulsions in one.

It would occupy too much space to give more than a mere outline of the subject; but future and more extended experience than mine may prove whether there is any connection between the two diseases. Deafness was a not unfrequent sequela of diphtherite and temporary paralysis: in all instances these were recovered from. I have only known one case of diphtheritic ophthalmia to have occurred in the neighbourhood. In that instance, the deposit extended over the lower half of the conjunctiva.

The treatment most successful was the early and thorough application of lunar caustic to the throat, together with the use of a stimulating gargle of nitrate of potass and capsicum, or solution of chlorinated soda (Beaufoy's) diluted. When there was much feverishness in the early stage, an emetic appeared sometimes to benefit. Mild but continued counter-irritation over the upper part of the chest appeared of great service. General treatment, beyond keeping the secretions regular, was of little use and frequently injurious. Depletion of any sort did an infinite deal of harm. Stimulants were often required in an early stage. The chances of recovery when croup set in severely were but small. The only chance seemed to be, in the rapid exhibition of small doses of calomel and ipecacuan, with stimulants, Under this treatment, four out of fifteen recovered who were affected with this complication. Tracheotomy was tried, but of no service, as the false membrane extended beyond the trachea.

In a number of the *Lancet* for. I think, the year 1832, there is a most characteristic case described by Dr. Alison, of Edinburgh, as having occurred in the Royal Infirmary, and which terminated, as the fatal cases here did, in croup.

A careful microscopic examination of the white deposit showed nothing different from the usual appearances of exuded lymph.—*British Med. Journal, June* 5, 1858, *p.* 449.

31.—DIPHTHERIA AND ITS CONNEXION WITH A PARASITIC VEGETABLE FUNGUS.

By Dr. Samuel Wilks.

Opinions still vary as to the true nature of diphtheria, and therefore as to its connexion with a parasitic fungus (oïdium albicans). As on several occasions the white film on the throat has been found to consist of this fungus, it has been conjectured whether the malady is not really one having a parasitic origin, and the belief has been rendered more probable from the fact that several new diseases have of late prevailed throughout the organic kingdom, both animal and vegetable, which are clearly traceable to parasites; for example, the oïdium of the vine. Unfortunately, those practitioners residing in districts where diphtheria has been endemic have been silent on this point, and it has only been by occasional observers that the fact has been made out. In the few cases of the disease which I myself have seen, a fungus has always been present, and thus my belief was, until lately, growing strong that in this observation would be found the true character of the malady, or, at least, that the parasitic growth was intimately connected with it, the question still remaining open whether the formation or growth of the fungus is the primary process, or whether a diseased condition of the surface must not previously exist to prepare a suitable nidus for its development; a question still debated in connexion with other parasites, as the porrigo lupinosa (faveuse), a disease in which some cutaneous inflammation is generally found, and thus creating a doubt as to whether this is excited by the fungus, or whether an herpetic or pustular eruption does not previously exist to form a suitable soil for the sporules which are afterwards sown in it. Let the formation in the throat be primary or secondary, it still remains important to know whether its presence is an essential part of the disease; indeed, the spreading character of the pellicle, its separation and destruction by corrosives, are all facts which seem to indicate that many features of the disease are due to its existence.

My attention being directed to this matter, I took the opportunity to examine the films which occasionally form on the mouths of those sick with various diseases; and on submitting them to the test of the microscope felt some surprise in witnessing in all fungous growth which I have not been able to distinguish from that of diphtheria. Thus, I lately had a woman die under my care in Guy's Hospital, with acute cerebral and spinal meningitis, pleuritis, &c., of a supposed phlebitic origin, and on examination of the pharynx after death, a pellicle was found composed of the parasite. Again, a child 4 years old presented itself among my out-patients apparently dying with croup, but on examination was found to be suffering from an extension of diphtheritic disease into the trachea. The throat and tongue were covered with a white pellicle, a portion of which being placed under the microscope, displayed very readily the oïdium; the only difficulty

about the case being the statement of the mother, that the child had suffered with the throat affection for several weeks. Mr. Hardy (a student) at my request kindly followed the child to Woolwich, and made a post-mortem examination. The throat, trachea, &c., were covered with a pellicle, as before said; and on removing this to find a cause for the chronic symptoms, a polypus of a papillary character was seen growing from one of the vocal cords, with thickened tissue around. Here was an explanation of the chronic symptoms; and upon this had arisen an acute inflammation, accompanied by the fungus. Another case was that of a man who died last week under my care in the Hospital with softening of the spinal cord. A few days before his death his mouth and tongue became covered with a white secretion, which very rapidly formed a complete layer over the whole buccal surface. An examination of this by the microscope showed a remarkably fine specimen of the fungus, the mycelium and sporules exhibiting themselves to perfection. On mentioning these circumstances to Dr. Barlow, he stated that he had under his care a child with a white film on its mouth (the case not being one of diphtherite), and he sent me some of the secretion for examination, when I found it to resemble the specimens already named; and the same occurred in one or two other cases which I have seen, but need not detail. These facts are sufficient to show that a vegetable fungus may spring up on the buccal mucous surface in various cases of disease, but requiring probably some previously morbid condition for a nidus. Is it not so in diphtherite? Is the disease, strictly speaking, a malignant sore-throat, and the formation of a pellicle an accident; or is the latter an essential part of the affection? In the case of the child just mentioned, if no post-mortem examination had been made to discover the chronic disease, the case would have been called diphtheria; and in the man with spinal paraplegia, the condition of the mouth would have been sufficient to have marked it a case of the same kind had there been no other affection present. Such cases may throw some light upon the opinion of those practitioners who, not residing in diphtheritic districts, and who see only isolated cases, regard the disease as a mere modification or peculiar form of some ordinary maladies, as cynanche and scarlatina, and this may in some instances be correct. In speaking of the parasitic growth found in the above-mentioned instances we are aware of the objection which can be made —That the fungus of diphtheria is peculiar (supposing it always to be present), and that found in the mouth of other sick persons is in connexion with aphthæ, and is another variety. In answer I can only say that I failed to discover in the above cases any difference and, moreover the character of the pellicle and its rapid extension over the whole mouth, throat, and tongue, was totally unlike ordinary aphthæ.

My object in bringing the subject before your readers that some is may extend these observations, and note how far throat affections, with these peculiarities, are prevailing in other patients besides those

with true diphtheria; and also that those gentlemen who are seeing much of this latter disease, will confirm or not the observations made by myself and others that the pellicle is *always* composed of a vegetable parasitic fungus. When more facts are ascertained on this point we shall be better able to judge of the characters of the disease.—*Med. Times and Gazette, Oct.* 2, 1858, *p.* 354.

32.—ON THE TREATMENT OF CROUP.

By Dr. Luzsinsky, Medical Director of the Children's Hospital at Vienna.

[The author observes that though this is essentially an inflammatory affection of the mucous membrane of the air passages, yet it is merely a local expression of a general diathesis, consisting in a too great plasticity of the blood, or a want of fluidity of the albuminous and fibrinous constituents. Hence Dr. Luzsinsky considers one great indication to be to act upon this peculiar crasis of the blood. This is unconsciously done by almost all the means which have obtained renown, such as mercurials, antimonials, sulphate of copper, and liver of sulphur. He especially recommends the use of alkalies, which possess the properties required in an eminent degree, without exciting diarrhœa, salivation, or other bad effects. With regard to the destruction or expulsion of the pseudo-membranes, it is observed:]

The destruction of the pseudo-membranes has been attempted by means of various caustics; and of all these, the author has found the nitrate of silver of the greatest service. A solution of 8 to 16 grains to the ounce should be carefully applied by means of a pencil, several times a day, as low down towards the larynx as possible. When the false membranes begin to loosen and separate in the larynx, or when this is filled with plastic mucus or puriform membrane, and the child, unable to expectorate, is threatened with suffocation, emetics, which at an early stage can only do harm, are now indicated; of these the author prefers the cupri sulph., giving from 2 to 8 grains in 2 ounces of water and one ounce of syrup, in teaspoonful doses every quarter or half-hour, until vomiting is produced. If the carbonate of potass has been employed at an earlier stage, the vomiting will usually cause the discharge of plastic puriform mucus, or, more rarely, of pseudo-membranes.

A child treated according to these indications, freed from its croup, requires little after-treatment beyond diet: and recovers much more rapidly than when he has been weakened by bleeding, emetics and purgatives, and his juices have become impregnated with mercury. As to tracheotomy, the author has no personal experience, and evidently he does not think well of it.

While during three years among 15,000 cases of children's diseases Dr. Luzsinsky met with but 30 cases of croup; in another three years

he met with 60 cases among 23,000 patients This he attributes to the reputation his successful treatment of the disease had acquired for him. Of these 90 cases, 55 occurred in boys, and 35 in girls, and the ages were as follows:—Under 1 year, 11 cases; from 1 to 2, 16; from 2 to 3, 16; from 3 to 4, 8; from 4 to 5, 9; from 5 to 6. 15; from 6 to 7, 14; and 9 years old, 1. With respect to the severity of the symptoms, these cases may be divided into three groups. The *first* is characterised by a hoarse voice, by a short, rough, barking cough, difficult respiration, indistinctness of respiratory murmur, with occasional whistling, more or less fever, and constancy of symptoms. The 36 cases of this group all recovered, because the disease was energetically attacked from the commencement. It is a class of cases calling especially for attention, because it often follows measles and influenza. Great care was taken in ascertaining that these were cases of true croup; and that every case exhibiting hoarseness with a rough cough and fever was not so designated, is shown by the fact that 100 cases were left unnoticed, under the designation catarrh of the larynx. The *second* group is distinguished by a weak, thin, screeching voice, a soundless, tubular cough, laboured respiration, a very feeble and hissing respiratory murmur, and great restlessness. In 43 patients the narrowing of the larynx had reached this point. It comprehended partly cases in which the early symptoms had been disregarded, or had not yielded to the means employed, and partly those in which the most suitable means, promptly applied, failed to check the progress of the disease. Of these cases 9 died and 34 recovered. In 5 of these the friends utterly neglected the means advised. The *third* group is marked by loss of voice, mere whispering remaining, a dry, suffocating, scarcely audible cough, and a high degree of orthopnea, the respiratory murmur being inaudible, and strangulation seeming imminent. In this condition were 11 cases, of which 5 recovered and 6 died. The disease had proceeded with such rapidity as to leave no time for the operation of remedies, or the pseudo-membranes had already formed when the children were brought in. In three of the recoveries suffocation seemed imminent, and the children were only saved by the active employment of the nitrate of silver.

As the general result of the 90 cases, 75 recovered and 15 died. In the first stage of the disease, all the 36 recovered; in the second, 34 of 43; and in the third, 5 of 11. The conclusion to be drawn is that the treatment should be prompt and active, before the crasis of the blood has become completely developed, and the inflammation localized.—"Journal für Kinderkrankheiten." Band xxix. pp. 155—176.

[In a subsequent number of the Journal (B. xxx. p. 209), Dr. Hauner, Director of the Children's Hospital at Munich, enters into a criticism upon Dr. Luzsinsky's opinions, and concludes his paper with the following aphorisms, which, in a forthcoming work, he intends developing at full length. 1. True croup (laryngeal croup), is a disease proper to childhood, and its cause is chiefly to be sought in the organi-

zation (the period of development) of the larynx at this period of life. 2. The anatomy and physiology of the larynx sufficiently explain the nature of croup. 3. It cannot be shown that croup is connected with any peculiarity of the blood-crasis. 4. True croup always commences in the larynx, and often passes downwards to the trachea, &c.; but it never passes upwards. 5. Laryngeal croup is characterised by a pseudo-membrane of more or less extent. 6. Laryngeal croup is to be carefully distinguished from diphtheritic croup, the latter always depending upon a peculiar blood-crasis, as seen in other organs of enfeebled individuals. 7. Diphtheritic croup is almost always secondary, and is not essentially different from croup in and after acute exanthemata. 8. The diphtheritic form begins as a general rule in the fauces, uvula, tonsils, &c., and extends hence downwards. It is very rare for it to commence in the larynx or trachea. A laryngeal catarrh may simulate laryngeal and diphtheritic croup very closely, but in it there is no formation of pseudo-membrane. 10. Such cases are very frequently mistaken for true croup. 11. There is no specific remedy in true croup, the treatment having to be adapted to the individual cases. 12. Emetics, cold, blood-letting, mercury, &c., are the means, adapted to special cases, that must be relied upon. 13. In certain cases of true croup an operation is desirable. 14. Diphtheritic croup requires for its treatment cauterisation, emetics, alkalies, and corroborants; but calomel, bleeding, blisters, or purgatives should never be employed. 15. Tracheotomy, is seldom advisable, especially on account of the liability to return of the diphtheritic process. 16. When performed it must be followed by cauterisation. 17. The severest laryngeal catarrh yields, as a general rule, to antiphlogistics and suitable regimen. The favourable results obtained in many such cases have been set down as examples of the cure of croup. Ed. *Med. Times.*] *Med. Times and Gazette, Aug.* 7, 1858, *p.* 148.

33.—*Dropping a Solution of Chlorate of Soda into the Trachea, to assist in the Treatment of Croup, after Tracheotomy has been performed.*—[A solution of chlorate of soda is said, by M. Barthez, to considerably facilitate the removal of false membranes from the air passages, after the performance of tracheotomy in croup.]

Action of the Solutions of Chlorate of Soda and Chlorate of Potash on False Membranes extracted from the air-passages.—In order to show the solvent action of the two chlorates, and the more rapid action of the soda, M. Barthez exhibited tubes containing these solutions, and false membrane introduced into them. These false membranes had been extracted the day before from the trachea and bronchi of a child who had died of croup. In one tube the membrane was placed in contact with pure water. In twenty-four hours no appreciable change had taken place in the appearance of the fibrinous tissue. Two other tubes contained the membrane in contact, for

twenty-four hours, with concentrated solutions of the two salts. The dissolution was the same in the two tubes: all membranaceous appearance had disappeared, and the tissue had become diffluent and semi-transparent.

Two other tubes contained false membranes which had been for eighteen hours in the same solutions. The solvent action had been the same, but at the end of twelve or fourteen hours the membranaceous form existed in the tube containing the solution of chlorate of potass, while this form had disappeared in the other tube. And lastly, after the false membranes had remained for eight hours in these solutions, the tissue was not altered in the solution of chlorate of potass, whilst that in the solution of chlorate of soda was completely diffluent; and this change was complete after it had remained three and a-half hours in contact with the salt. M. Barthez does not insist on this as the length of time sufficient to produce solution of false membrane; the time must vary according to the thickness, density, and composition of the substance secreted, and according to other unknown circumstances.

Effect produced by Chlorate of Soda on false membranes still retained in the trachea.—In dropping a solution of chlorate of soda into the trachea, M. Barthez states—"My only object is, to obtain a solution of the false membranes, in the same way in which that occurs in the tubes as just exhibited. I expect only to soften the adherent surface sufficiently to allow of the membrane becoming more easily detached by the fits of coughing, and so being expelled. The following facts make me think that this object may be sometimes obtained.

"In one patient, a portion of false membrane, which was adherent, and causing suffocation, became detached, and was thrown up in two hours after the drops had been commenced, they being used every quarter of an hour. This false membrane lined the trachea, and went down as far as the bifurcation of the bronchi.

"In another child, drops of cold water, used in the same manner for six hours, produced no result; while, after a warm solution of chlorate of soda had been used for one hour, fragments of false membrane became detached, and were thrown up, and continued to be expectorated abundantly for several hours."

Let us now see the condition in which the false membrane has been found in some children who died, notwithstanding the use of the chlorate of soda drops. In a little girl, 21 months old, the croup progressed so rapidly, that thirty-six hours after its invasion, impending asphyxia rendered the operation necessary. No false membrane was thrown up after the operation. The chlorate of soda was dropped in almost every hour, and at the end of about twenty-four hours a small fragment of false membrane escaped from the canula; however, no

improvement followed. On the next day, the dropping in of the fluid caused very slight cough, and the discharge of an aqueous fluid, slightly opaque, like when purulent mucus is shaken in water; moreover the sharp râles indicate an extensive capillary bronchitis. Death supervened the fourth day after the operation. The trachea was lined by a false membrane, slightly adherent and tenacious, and softened down, so that it was almost impossible to detach it in strips. This membrane did not cover the entire of the mucous surface, but formed, as it were, little islands, between which the exposed mucous membrane was visible, giving a mottled appearance to the internal surface of the trachea. In this case it would seem that the false membrane had been softened on the internal surface, and worn away and detached in several places.

In a boy three and a-half years old, who was admitted into hospital on the fourth day after the commencement of the croup, M. Barthez first causticized the larynx, by means of Dr. Loiseau's tube. This was done three times, at intervals of thirty hours, but without any marked effect; at length asphyxia became imminent, and tracheotomy was performed, and was followed by a rejection of some false membrane. A solution of chlorate of soda was dropped in every hour or half-hour; each drop produced a slight fit of coughing, followed by expectoration of mucus, without any false membrane. No improvement took place, and the child died twenty-four hours after the operation.

At the autopsy we found a false membrane extending continuously from the top of the larynx to the third ramification of the bronchi. In the larynx this yellow false membrane filled the ventricles, and closed up the wind-pipe; it was adherent to it, and sufficiently consistent to be detached in one piece. In the trachea it formed a complete tube; but from the inferior part of the larynx to the commencement of the bronchi it was softened, almost semi-fluid, and could only be detached in small fragments. In the bronchi it resumed its consistence, and closed up a great portion of the air-tubes. In this child, then, the chlorate of soda appears to have softened the false membrane superficially, but there was not sufficient time for it to be detached and thrown up.

In a child five years of age, admitted on the third day after the attack, ordinary treatment having failed, the operation was performed on the fourth day. After the lapse of about an hour, false membranes were thrown up spontaneously. Two hours later, their expulsion having ceased, we began to use the chlorate of soda drops every half hour. A very large quantity of false membrane was thrown up for about four hours; then all expectoration ceased, and the child died asphyxiated ten hours after the operation. The larynx was found partly obliterated by false membranes of a medium size, and partly detached. On opening the trachea, this tube did not contain any fibrinous product, but at its inferior portion, and at the commence-

ment of the bronchi, there existed a collection of false membrane, placed across the bifurcation of the bronchi, falling down into each bronchial tube, and prolonged uninterruptedly as far as their third ramification. This mass was not anywhere adherent; it seemed to be altogether detached from the parts above it, and to be retained below only by its continuity with that portion which filled the bronchial tubes.

These five cases are sufficient to show that the action of chlorate of soda on false membranes in the trachea is, if not certain, at all events very probable. They show also its different modes of action. In appreciating its value, we are to take into account, not only the solvent power of this solution, but also the effects of the application of water alone, and also of the fits of coughing which the introduction of fluid will produce; and the assistance thus rendered to the detachment of the false membranes. Notwithstanding this complicated mode of action, M. Barthez thinks he has good grounds for referring the good results, partly or entirely, to the solvent action of the salt.

Indications and Contra-indications for the Use of Chlorate of Soda Solution.—1. The first indication arises from the existence of false membrane in the trachea, or in the trachea and bronchi. If the fibrinous product be seated in the throat or larynx exclusively, it would not be necessary to use the drops. It certainly is not always easy to be satisfied as the existence of this false membrane in the larynx; but supposing any doubt to exist on the subject, there would no harm arise from their use. In that case they act, not so much by the specific power of the salt as by the warm water, which dilutes the adherent mucus, provokes cough, and favours expectoration.

2. Whatever be the situation of the false membrane, if the child presents symptoms of diphtheritic poisoning, there is no motive for using the drops. In that case it is not the false membrane which kills. We are not warranted even in performing tracheotomy; much more is the use of the chlorate of soda solution perfectly inefficacious.

3. If the expectoration is easy and abundant—if the false membranes are easily detached, and thrown off in proportion as they are formed, there is no occasion for using the drops.

4. The only indication for their use, then, is in those cases where, after operation, the false membrane in the trachea or bronchi is thrown off with difficulty, and threatens to produce asphyxia. The symptoms which indicate such condition are not absolutely certain. Those which have hitherto guided me are the dry and stridulent noise, or sort of dry *claquement*, produced by the passage of air through the canula and the trachea; the obscurity of the respiratory murmur; the absence or scarcity of mucous or pseudo-membranous

expectoration; the persistence of, or the not sufficient rallying from, the impending asphyxia which precedes the operation.

The indication being well established, will the use of this solution, as described, of necessity bring about a cure? That does not at all follow, as, indeed, is proved by the cases above detailed. The chlorate of soda may assist the child in getting rid of the mechanical impediment to the entrance of air into the lungs; it does nothing more. After tracheotomy, life depends on too many different circumstances for us to hope to save it by one single measure which is only calculated to serve a special purpose, as is the chlorate of soda. It is, then, only under the circumstances which I have pointed out, that I consider the use of the solution of chlorate of soda can be of any service after tracheotomy, or that I advise surgeons to make trial of it.—*Gazette Medicale.—Dub. Hospital Gazette, July* 1, 1858, *p.* 202.

ORGANS OF DIGESTION.

34.—ON STOMACH DISORDERS CONNECTED WITH TUBERCULAR DISEASE OF THE LUNG.

By Dr. George Budd, Prof. of Medicine in King's College, London.

[In the majority of cases of tubercular lung disease the function of the stomach is more or less disordered, loss of appetite, gastric pain after food, and especially vomiting, being almost symptoms of phthisis. The matter vomited is generally very sour, and contains a large amount of free acid. It is of the utmost importance that these gastric disorders should be relieved, as they interfere very much with the due nutrition of the patient.]

The most common abnormal condition of the stomach in persons dead of phthisis, is a softening of its mucous membrane, caused, after death, by the action of the gastric juice. This change is most common in the big end of the stomach, where, after death, the liquid within it chiefly collects. The change may consist merely in slight gelatinising and softening of the mucous membrane, so that it can be more readily scraped away; or the membrane may be in places entirely dissolved, when the vessels that ramify beneath it come into view, blackened by the action of the gastric acid on the blood they contain. In some rare instances all the coats of the stomach are dissolved in succession, and its contents escape into the peritoneal sac.

These changes are more commonly met with in summer than in winter; because the higher the temperature, the more rapidly the post-mortem digestion proceeds. Occasionally, in the stomach of a person dead of phthisis, marks of *inflammation* are found. The mucous membrane is thickened in places, and more vascular than usual, and often coated by viscid adhering mucus. Sometimes in these cases

very minute superficial ulcers of the mucous membrane are seen, and in such instances there has often been during life some traces of blood in the matters vomited.

The functions of the stomach are, no doubt, in some degree disordered in phthisis by the fever, and the constitutional disturbance that so commonly exists; but the gastric symptoms and the various abnormal appearances of the stomach found after death in the subjects of this disease, appear to be owing in great measure to a reflex disturbance of the stomach, excited by irritation in the lung.

Tubercular disease of the lung, and the inflammation it sets up, by irritation of the filaments of the pulmonary nerves, causes not only cough but reflex nervous disorder of the stomach, of which vomiting at the end of a fit of cough is commonly the first symptom. A similar extension of the spasmodic act occurs in whooping-cough, where the paroxysm of cough frequently terminates in vomiting. Vomiting is often excited in the same way—that is, by a reflected nervous influence—by causes of disturbance in other parts of the body. It is a common effect of inflammation of the brain, and occurs almost constantly during the passage of gall-stones through the gall-ducts, and during the passage of a urinary calculus from the kidney to the bladder.

In phthisis, the irritation of the lung on which the vomiting primarily depends is persistent, and consequently the stomach disorder is persistent, or very apt to recur.

Vomiting occurs more frequently, and other gastric disorder is more common in women than in men, because the nervous systems of women are more susceptible, and reflex nervous disorder of any kind is more readily excited by a given disturbance in them.

In some cases of phthisis, the mere mechanical act of vomiting is excited; there is mere vomiting of food, or, if the stomach happen to be empty, dry retching.

In other cases, the secreting apparatus of the stomach is excited by a reflex nervous influence to pour out large quantities of gastric acid, and much sour fluid is ejected from it.

In the same way, inflammation of the brain, or the passage of a gall-stone, not only excites the mechanical act of vomiting, but also, in some cases, a great outpouring of gastric acid.

By untimely secretion and waste of gastric juice the power of the stomach is exhausted; and when food is subsequently taken before this power has been restored, there is an insufficient secretion of the solvent juice, and digestion is slow and imperfect. The food, when it has remained undigested a certain time, irritates the mucous membrane, renders the stomach tender and painful, and causes, by the frequent repetition of the same process, the inflammatory appearances which the lining membrane after death sometimes presents.

In most lingering diseases the secretion of gastric juice ceases before

death, and no post-mortem digestion of the coats of the stomach takes place; but in phthisis it often happens that, through untimely secretion of gastric acid, or in consequence of fermentative processes within it, the stomach at the time of death contains a digesting acid, and its coats after death become dissolved from within outwards to a degree which depends on the energy of this digestive fluid, and the temperature at which the body has been kept.

When great fatty enlargement of the liver occurs, as it not unfrequently does in women, there may be, as I have already stated, another cause of disturbance: the pyloric end of the stomach may be compressed; the stomach may, in consequence, become enlarged; and then, superadded to the other forms of indigestion, are those which result from an impediment to the ready and complete emptying to the stomach through the pyloric opening.

There are three classes of remedies available in the treatment of these stomach disorders; viz., sedatives, alkalies, and astringents. Where the cough is hard, and, as often happens at first, vomiting occurs only after hard fits of cough, the most effectual remedies are sedatives. Three or four minims of dilute hydrocyanic acid, or a twelfth of a grain of the muriate or acetate of morphia, three times a-day, or these two medicines in combination, will often lessen the violence of the cough, and arrest the vomiting that depends upon it.

If there be excessive secretion of gastric acid, or excessive acidity of the stomach from other conditions, hydrocyanic acid often fails to quiet the stomach, sometimes even renders the vomiting more frequent, and the vomiting may be checked for a time by alkalies.—by fifteen minims of liquor potassæ, or by fifteen grains of the bicarbonate of potash or soda twice a-day, an hour before meals.

But, generally, where there is untimely and excessive secretion in the stomach, the most effectual remedies are astringents. Five grains of the trisnitrate of bismuth may be given three times a-day, a quarter of an hour before meals, or ℥iss. of infusion of logwood, or some other vegetable astringent.

The vegetable astringents check excessive secretion in the stomach as they do in the bowels, and allay vomiting that depends on excessive secretion as they allay diarrhœa.

Medicines of these different classes may often be given in combination with better effect than either may be given singly. Hydrocyanic acid, for example, may be given with advantage in combination with soda, or potash, or bismuth, when it cannot be given alone.

Lime-water, which is at once alkaline and astringent, is often of much efficacy in these and similar cases.

When vomiting occurs soon after meals, or when food, especially solid food, excites pain—when there is reason to believe that an inflammatory state of the stomach exists—the most effectual remedy is a light and easily digestible diet.

A disposition to vomiting is always much increased by a costive

state of the bowels, and it is therefore essential to obviate this by the occasional use, if need be, of some aperient that does not fret the stomach.—*Med. Times and Gazette, Aug.* 7, 1858, *p.* 131.

35.—ON THE TREATMENT OF DYSENTERY BY THE ADMINISTRATION OF LARGE DOSES OF IPECACUANHA.

By E. S. Docker, Esq., Surgeon to the 2nd Battalion of the 7th Royal Fusiliers.

[In the Island of Mauritius dysentery frequently prevails in a very severe and fatal form. The author was stationed there with his regiment for nearly six years, and had therefore ample opportunity of becoming acquainted with this disease. His treatment was very unsuccessful, till he made trial of the powdered root of ipecacuanha in large doses. He says:]

I have tested this medicine in cases of every kind and degree. Out of upwards of fifty cases of dysentery I lost but one (in former years the mortality ranged from ten to eighteen per cent); and in the instance in question death was caused by abscess in the liver: the primary disease had been not only cured, but very thoroughly cured, as I shall hereafter show. I must observe that I had at one time been in the habit of prescribing ipecacuan in the small doses recommended by Mr. Twining; but so ineffective was it when thus administered,—excepting in cases of no great severity, wherein other medicines answered as well, *without* the inconvenience of nauseating,—that I had long ceased to employ it. On resuming the use of ipecacuan, I gave it in doses ranging from ten to ninety grains; rarely less than twenty grains. The larger quantity was given in urgent cases only, the ordinary dose being a scruple or half a drachm. The action of these large doses is certain, speedy, and complete; and truly surprising are sometimes their effects. In no single instance has failure attended this medicine, thus employed. I am not, of course, sufficiently sanguine to expect that it will invariably succeed; but of this I am convinced, that it will effect a complete cure in an immense majority of instances.

In all constitutions, robust as well as delicate, under all circumstances, the result is the same. In the very worst cases, when the strength of the patient is almost exhausted, after the whole range of remedies has been tried in vain, the disease running its course swiftly and surely to a fatal issue, ninety grains of ipecacuan have been given, and forthwith the character of the disease, or, I should rather say, the character of the *symptoms* has been entirely changed; for the disease itself is literally cured, put a summary stop to, driven out. The evacuations, from being of the worst kind seen in dysentery, have not gradually, not by any degrees, however rapid, changed for the better; they have ceased at once, completely. There has been no incli-

nation even to stool for twenty-four or thirty-six hours, the patient all the time in a state of delightful ease and freedom from pain ; then at last, without aid of any kind, a pefectly natural, healthy evacuation, all irritation, pain, and tenesmus having at the same time entirely ceased.

Nor is there the disposition to relapse so common in acute dysentery. I have not observed what may be termed a true relapse in any instance. If the patient contracts dysentery again, he does so *de novo*. All that remains—the medicine having cut short the disease—is for the patient to recover strength ; and this quickly follows, without any extraordinary care as regards diet and regimen, so indispensable and requiring such nicety of management in convalescence from dysentery generally. The usual necessity, moreover, for after treatment, in the shape of a long course of astringents, &c., is in most cases entirely obviated, a few doses of some vegetable tonic being all that is needed.

It may be asked by what means the stomach is enabled to retain such large doses of an emetic substance. The course I have generally adopted is as follows :—In the first place, a sinapism is applied over the region of the stomach, and simultaneously a draught given containing a drachm of laudanum. Half an hour after, when the sensibility of the stomach has been, by the action of the opium and counter-irritant, as much as possible diminished, and the patient's attention is occupied with the sinapism or by conversation, the ipecacuan is administered—generally in a draught, sometimes in the form of pill or bolus—and the semi-recumbent posture steadily maintained. In a considerable proportion of cases, the medicine is not rejected, or it is at least retained long enough to enable it to do its work. If necessary, I repeat it till the stomach does retain it. I never yet have been obliged to give it in the form of enema. Where so considerable a dose as sixty or ninety grains has been administered, I in general wait ten or twelve hours before giving another. Should the bowels, however, not meanwhile have acted, a repetition is not generally required. I ought here to mention that I begin the treatment of dysentery, in most cases, with an emetic—always with a thorough clearance of the bowels.

To those acquainted with tropical dysentery, the facts I have stated relative to the action of large doses of ipecacuan may appear almost incredible.

I now come to one of the worst cases that occurred in the 5th Fusiliers during the time I was in medical charge. This case exhibits the specific action of large doses in dysentery in a striking manner. At that time I was not so fully conversant with this medicine, and as the man was extremely ill at the time of admission I deemed it advisable at first to employ calomel ; and this medicine, which by many is looked upon as a specific in dysentery, had a fair trial—so fair, indeed, as to place the life of the patient in considerable jeopardy. At this juncture it will be observed by those practically conversant with

dysentery that the man's symptoms were indicative of extremest danger. Fortunately, recourse was had to ipecacuan; and this medicine was given in full (drachm and a half) doses three times. But I must not anticipate. As this case is so interesting, I make no apology for transcribing it nearly in full:—

Private J. T——, aged twenty-eight, admitted March 18th, 1855; a slight narrow-chested, delicate man. Has frequent purging of copious stools, consisting mostly of fluid-feculent matter, with some admixture of mucus and much blood. Says "he has no pain in the belly, no tenderness on pressure." (This was taken *cum grano salis*, for there was an evident disposition to make as light as possible of his complaint: he knew he had been guilty of disobedience of orders in not coming to hospital sooner. Closely questioned, he at last confessed that he had been ill for several days before reporting himself sick.) Admits having tenesmus. He was under treatment for acute dysentery in April, 1852. Ordered an emetic immediately, and every four hours a draught consisting of oil of turpentine, ten minims; acacia mucilage, half an ounce; tincture of opium, twenty minims; peppermint-water, one ounce. In the evening the report was: "Has passed since morning two scanty dysenteric stools." Ordered half an ounce of castor oil and twenty drops of laudanum.

March 19th. Eight motions during the night, copious, feculent, and semi-fluid, with some froth tinged with blood on the surface; pulse 92, soft; tongue coated in the centre. To continue draughts of turpentine, &c.—Evening: Bowels have acted three times since morning; stools scanty, and of a highly dysenteric appearance. Ordered ten grains of calomel and one of opium immediately; the same to be repeated at four o'clock in the morning.

20th. Has had during the night eight or nine motions, fluid, dark-coloured, feculent, with a little mucus, and more blood on the top; straining very severe and there is much tenderness on pressure over the cæcum; pulse 132, soft and rather full; tongue furred. Ordered —calomel, two grains and a half; tartar emetic, one-eighth of a grain; hydrochlorate of morphia, one-sixth of a grain, every four hours.—Evening: Bowels moved eleven times since morning; stools more dysenteric in appearance, with less of feculent matter. A sinapism was ordered to be applied immediately over the stomach; internally, sixty minims of laudanum, and half an hour after, a draught consisting of a drachm and a half of ipecacuan to an ounce and a half of water.—Ten P.M.: The report was that he retained the ipecacuan draught two or three minutes only; has been moved twice since six P.M.; stools very bad indeed, quite liquid, with hardly a trace of feculence, consisting chiefly of a little mucus and a very large proportion of fluid blood; he is excessively weak; pulse rapid and thready, intermittent; surface cold, and bathed in perspiration; tenesmus severe. The opiate draught was now repeated, but this time with twenty minims only of

laudanum; half an hour after, ninety grains of ipecacuan, as at six o'clock.

21st. Has passed a tolerable night, and feels better, bowels not having been once moved since the administration of the last dose of ipecacuan, which he retained an hour and a half, then vomiting three times. He feels nausea at present. Is perfectly composed, and free from pain or irritability. Pulse 120, full and soft; tongue furred, but moist.—Evening: No action of the bowels since morning; the draught was retained three hours: he then vomited once. To have, at bedtime, a draught composed of liquor acetate of ammonia, half an ounce; liquor acetate of morphia, thirty minims; tincture of matico, and compound tincture of lavender, of each one drachm; peppermint water, one ounce.

22nd. Marked improvement in every respect. After an interval of thirty-four hours his bowels have at last acted, during the night, once only; stool scanty, semi-consistent, feculent and homogeneous, without a trace of blood or mucus. He is entirely free from pain or tenesmus, and perfectly comfortable in every way. Draught last ordered to be continued every six hours.

23rd. Improvement continues. No motion since last report. Pulse 100, jerking; tongue coated. Ordered, camphor mixture, one ounce; liquor acetate of ammonia, half an ounce; disulphate of cinchona, two grains; tincture of lavender, one drachm: to be taken every four hours. Chicken broth; brandy, half a gill.

24th. One scanty, consistent, entirely feculent stool; pulse 90, soft; tongue cleaning. Ordered, infusion of gentian, two ounces; disulphate of cinchona, two grains: three times a day. Brandy, one gill.

25th. Improvement maintained. No motion. Gentian draughts repeated.

26th. Continues to get better; one natural evacuation. Tonic draughts continued. Broiled chicken.

April 11th. Discharged cured.

A more remarkable case than the above could hardly be. It is an unquestionable fact that this man's life was saved by ipecacuan, given in the doses it was, *and by ipecacuan alone*, for the opium *only* aids in enabling the ipecacuan to be retained. Moreover, I am convinced that, in the condition he was on the evening of the 20th March, by no other known means could he thus, as it were, have been snatched from the brink of the grave. Instead of dying, however, this soldier was at his duty, completely cured, in little more than three weeks from his admission, desperately ill, into hospital. It will, I think, be conceded, that this last case, if not those preceding it, ought to secure for the ipecacuan-in-large-doses treatment at least a fair trial.—*Lancet, July* 31, *and August* 14, 1858, *pp.* 113, 169.

36.—CASES ILLUSTRATING THE VALUE OF "KAMEELA" AS AN ANTHELMINTIC.

By Dr. William Moore, Physician to the Institution for Diseases of Children; Ex-Lecturer on Materia Medica and Therapeutics, &c., &c.

[An interesting article on this subject will be found in vol. xxxv. p. 367, by Dr. Gordon, 10th regiment of foot.]

Before detailing the following cases, in which kameela was the only anthelmintic exhibited, it might not be out of place to give a brief account of the botanical character of this agent, which has so recently been introduced to the profession in this country.

Kameela is the reddish-brown powder which clothes the capsules of the Rottlera tinctoria, one of the euphorbiacæ. This middle sized, erect, branching tree, named after the Rev. Dr. Rottler, who resided at Tranquabar for many years, in the character of a Danish missionary, is found in the hilly parts of India, along the base of the Himalayas, from Assam to near Peshawur, in central India, at the northern Circurs, in Mysore, and at Parrell Hill, near Bombay; besides in Ceylon, China, Australia, and Arabia. The capsules of the fruit of this tree, which are about the size of a small cherry, are clothed with abundance of deep-red granular powder, easily rubbed off, much esteemed as a dye for silk. When the capsules are ripe, in February or March, they are gathered, and the powder carefully brushed off. Dr. Anderson, professor of chemistry in Glasgow University, who has written on the colouring matter of the rottlera tinctoria, found it to possess a substance which he named Rottlerine. It consists of yellow crystals, having the form of minute plates, and a fine satiny lustre; it is insoluble in water, and sparingly soluble in cold alcohol. This brick-red coloured powder has been variously named: Dr. C. A. Gordon, of the 10th regiment, calls it Kameela; Dr. Giraud, professor of materia medica in Grant's Medical College, Bombay—writing of it, calls it Kameyla; Dr. Anderson, Kamila; and Dr. Mackinnon, Kamala. The Sanskrit word, *Vasan tagandha (vasunta gunda)* "spring fragrance," has been applied to it. Mr. Hanbury states that kameela resembles lycopodium, in the difficulty with which it is mixed with water, and in the manner in which it ignites when thrown into the air over the flame of a candle. In the year 1856, I first heard of the anthelmintic properties of the kameela, from Dr. Benjamin Simpson, of the Bengal army, who spoke most favourably of his experience of it, considering it quite specific for the expulsion of tapeworm. Having failed to obtain it, either here or in London, I procured some of it direct from India. Now it can be obtained at most of the establishments of repute in either metropolis.

The following cases will show the effect of kameela in the expulsion of tapeworm.

Mrs. M——, aged 28, has been some years married, and has no family; she complained of palpitation, borborygmus, and a constant knawing sensation in the epigastrium; and occasionally, for the past six years, has been passing small portions of tapeworm. On the 18th February last, Dr. Hardy, whose patient she was, prescribed kameela in ℥ss. doses, after which she passed several inches of tapeworm. On the 20th February, Dr. Hardy having mentioned the partial success attendant on the exhibition of ℥ss. of the kameela, we agreed on its being repeated in ℥i. doses, and after the second drachm had been taken, she passed a tapeworm one yard and a quarter long. On the 24th, the patient still suspecting the presence of a worm, the powder was repeated in ℥i. doses, when, after the third powder, she passed another worm two yards long. Both worms were passed dead. The powder was taken fasting, and repeated after six hours; it caused no further inconvenience than by acting freely on the bowels. This patient stated that she had tried various remedies for the last few years. Turpentine brought away short pieces of worm at first, but afterwards lost its effect. Koossoo she found ineffectual.

The next case (which has been kindly furnished me by Dr. White, surgeon to the Roundtown Dispensary), was that of a boy, aged about nine years, who has been troubled with tapeworm some time, passing small portions from time to time. Turpentine, and purgatives of various kinds, gave him temporary relief, but after a few days portions of the worm reappeared in the stools. Dr. White's report is as follows:—"According to your suggestion, I gave him 'kameela'—the first dose, gr. xv., at eight o'clock, a.m., on the 19th March last. This purged a couple of times, bringing away enormous quantities of the worm, in small pieces—none more than a few inches in length. Next morning (the 20th), at ten, a.m., the dose was repeated: and this time it also purged freely, carrying away quantities of the segments of the worm, about one inch in length. At four, p.m., on the same day, the boy's parents repeated the dose without my order; but although it moved the bowels freely, not one piece of the worm could be found in the dejections. On inquiry, I find that, since the 20th, not a sign of the worm has been found in the stools, although carefully examined; clearly showing that the entire worm has been expelled."

In cases of ascaris lumbricoides and vermicularis you will find its action very satifactory. Where you meet with the latter parasite giving rise to annoyance in young persons and children, by giving "kameela" in doses of from gr. x. to gr. xx., according to the stamina of the patient, and when this has acted on the bowels, then—provided there are no febrile symptoms present—prescribing syrup of iodide of iron, these intruders will be radically expelled. The following cases will exemplify this treatment:—

In the month of January last, a boy, aged ten years, was brought

to the Institution for Diseases of Children. His father stated he had been troubled with "small white worms" since childhood, for which he had taken all forms of "worm-powders" ineffectually. I gave him gr. xv. of kameela, to be repeated after six hours, if the first powder did not act. The next day the boy was brought to me. His father stated the powder had acted once freely on his bowels, and brought away about an "egg-cup full" (as he expressed it) of small worms. Thinking that some still remained, he gave a second powder the following morning fasting, but no worms came away: in fact the first dose had effectually cleared the "*prima via*." I gave the lad syrup of iodide of iron. The same treatment was pursued in the case of his younger brother, since which date they have been quite free from these parasites. In such cases the kameela effectually clears the course of these "intruders," and the syrup of iodide of iron prevents their reproduction.

Of the vermifuge properties of this agent, Dr. Giraud, professor of materia medica in Grant's Medical College, Bombay, says:—"It is used for all kinds of worms, but especially tapeworm, for which it is successful after turpentine and koossoo have failed. The dose for an adult is from two to three drachms, which usually purges four or five times, and brings away the worm."

Dr. Anderson, 43rd regiment, refers to 95 cases of tapeworm treated with kameela, in two of which cases only no worm was expelled.

Dr. Charles Alexander Gordon, 10th regiment, states:—"With kameela there is no unpleasant effect. It is not even necessary to take a dose of purging medicine as a preparative; and beyond a trifling amount of nausea and griping, in some instances, no unpleasant effects are experienced; while by far the greater number of persons to whom it is administered suffer no inconvenience whatever beyond what they would from a dose of ordinary purging medicine." Of the tincture he writes:—"Suffice to say, we prepared a spirituous tincture, by adding Oj. of alcohol to ℥iv. of the powder, and then filtering. We never obtained more than ℥vj. in this way, and of this ℥j. in mint-water was found to be a sufficient dose; ℥ij. in some cases were required, and in one or two instances ℥iii." In continuation he adds:—"I have never seen the remedy fail in removing the worm, in a case where there were unequivocal symptoms of its presence; for, as you are well aware, many persons insist upon it, that they are suffering from intestinal worms, and yet have no absolute proof of being thus affected."

Dr. C. Mackinnon, superintending surgeon, Bengal Presidency, prescribed kameela to a gunner affected with tapeworm, who had taken turpentine and koossoo without effect. He gave him three drachms for a dose, and this not having acted he repeated the same quantity after four hours. With the fourth stool he passed a tape worm six yards long. Dr. Mackinnon has administered it to nearly fifty

patients, and in two cases only no worm came away. He says:—"As far as my experience goes, I have found it a better and more certain remedy than either turpentine or koossoo, and much less disagreeable to take than either of these remedies." The following are his conclusions:—"1st. That kameela is a safe and efficient remedy for tapeworm, and more certain than either turpentine or koossoo. 2ndly. That to a strong European three drachms may safely be given as a dose. 3rdly. That to a person of feeble habit, or to a female, one and a half drachms, followed, if necessary, by half an ounce of castor-oil is a sufficient dose."

Dr. Leared, Physician to the Great Northern Hospital, gives the details of a case of tapeworm, in a female aged 26 years, in which ℥i. doses of kameela were successful, after turpentine, pomegranate, and oleum filicis maris had failed. He adds:—"So many approved medicines having been fruitlessly tried, coupled with the success attending the kameela, make this case of great interest."

In the case of Mrs. M——, the kameela succeeded when turpentine and Koossoo had failed. Almost all the authorities I have cited, speaking relatively of the anthelmintic properties of kameela and koossoo, give the former the first place. With respect to kameela, I should say koossoo stood "proximus huic, longo sed proximus intervallo." Its vermifuge properties are undoubted; but its cumbrous nature, and the uncertainty of its action, rendered it liable to be superseded on the earliest occasion. Kameela has long been used in cutaneous diseases. The Arabs gave it internally in leprosy, and also applied it externally in affections of the skin. In the 'Dublin Hospital Gazette,' November 15th, 1857, I published some cases of "Herpes Circinatus," in which the local treatment was kameela, applied on moistened lint. The water in which the lint is wetted should at least exceed 90° Frht., as kameela is comparatively little affected by cold water.

In conclusion, I have only to add, when the authorities adduced in proof of the effects of this agent are taken into account, coupled with my own experience of it, the absence of any disagreeable taste or smell, its portability, and the simplicity of its physiological action, compared with those vermifuges as yet at our disposal, I feel I can recommend it with confidence to the profession. The dose of the powder may vary, according to the age and calibre of your patient, from ℥j. to ℥iij. If necessary, it may be repeated after four or five hours. The dose of the tincture (preferred by Dr. Anderson) is from ℥j. to ℥iij.—*Dublin Hospital Gazette, May* 1, 1858, *p.* 132.

37.—*On the Use of Kamala as an Anthelmintic.* By Dr. Arthur Leared, Physician to the Great Northern Hospital.—A large number of cases of intestinal worms of all kinds have been treated at the Great Northern Hospital by my colleagues and

myself. Success has been almost uniform; indeed, I can only call to mind one case (treated by a colleague), in which a tape-worm, ascertained on sufficient evidence to exist, was not expelled on using kamala; and in that instance the medicine was not taken in sufficient quantity. This success is remarkable, considering that we have such constant applications for the cure of tape-worm as to lead to the belief that the patients come specially for the sake of the kamala.

Kamala is efficacious, as I have already said, against all kinds of worms, but as a remedy for threadworm I know of no medicine to be compared with it. I consider the tincture to be as efficacious as the powder. Royle, who notices the medicinal use of kamala in India, makes the mistake of referring its anthelmintic power to mechanical action. Its activity is due to the soluble resin, and at my request Mr. Hanbury has lately prepared a resinous extract. One drachm of the tincture is found to contain four grains of extract. I cannot at present report on the relative value of these preparations. The extract has the advantage of concentration, since a sufficient dose of it can be administered in pills. The powder, which, as imported, contains portions of leaves and stalks mixed in very large proportion with the red particles, should always be sifted, to separate the latter, as the griping tendencies of kamala are thereby much diminished.—*Lancet, May* 29, 1858, *p.* 541.

38.—*Nitrate of Silver in Ascarides.*—Dr. Schultz states that he has employed enemata of this substance with great success for the removal of the *oxyuris vermicularis* which so frequently infests the anus in such large numbers. The clyster is formed of argent. nitrat. gr. x. ad xv. to aq. dest. ℥iv. Two, or at most three, of these suffice to effect a complete cure. The first one does not usually remain up long, and worms, some living and others dead, are returned with it. The next clyster remains from six to twenty-four hours, and the great mass of the dead worms are discharged with it.—*Deutsche Klinik.*—*Med. Times and Gazette, June* 5, 1858, *p.* 586.

39.—ON THE ALLEGED SUGAR-FORMING FUNCTION OF THE LIVER.

By Dr. F. W. Pavy, London.

[Ten years ago it was announced that the liver possessed a sugar-forming function, and the statement was soon received as an established physiological fact. The author repeated Bernard's experiments, and with the same results; finding immediately after death a large quantity of sugar in the liver, blood of the hepatic veins, and right side of the heart. But a question here arises which must be settled previously to prosecuting further investigation, viz.—Is sugar natural to

the right ventricular blood of the *living* animal; and to the *living* liver? If found immediately after death, the inference that sugar is likewise present during life, is certainly plausible; but in such subjects, nothing should be received except as the result of strict investigation. Now an instrument can readily be passed through the right jugular vein into the ventricle of the living animal, and blood so obtained will be found to contain the merest trace of sugar, so slight as to be liable to be overlooked altogether. If the animal be now destroyed, the blood of the right ventricle will be found as usual to contain much sugar—contrasting very forcibly with that obtained during life. From other experiments, it appears that the sugar found in the liver after death, is also a post mortem effect. The amount of sugar present rapidly increases for some time after death; and if immediately after death a a strong solution of potash be injected into the liver, so to drive out the major part of the blood, sugar cannot be detected. In fact]

What has been regarded as the result of a functional operation of life would seem to be nothing more than a *post mortem* chemical transformation taking place so instantly after life is destroyed as to have hitherto led us into a misconception upon the subject.

From a consideration of all the facts brought forward, which, in every respect, to the fullest extent corroborate each other, and which stand uncontroverted by any single result I have yet encountered, I think we are unavoidably led to deprive the liver of that sugar-forming function with which, in recent days, it has been endowed by physiologists. Our position in reality stands thus:—The conclusions upon which our former notions were based, were drawn from the results obtainable after death. But, it now becomes apparent that we are no longer justified in regarding these results as indicating the condition that belongs actually to life. It is not that Bernard's observations are incorrectly recorded, or his experiments inexact; but that fallacious inferences, as shown by more extended investigation, have been drawn from these experiments and their results. The views I have advanced are in every respect perfectly compatible, not with our former conclusions it is true, but with the experiments upon which those conclusions were founded. From an ordinary examination of the liver and the blood of the right side of the heart after death, we obtain reactions that infallibly indicate a large impregnation of sugar. The deduction from this hitherto has been, that the sugar existed there naturally during life. This deduction, however, although it has appeared to our minds exceedingly plausible—so plausible, indeed, that no one before has been led to question it; yet confined to such experiments, it is obviously gratuitous. All that can be strictly or logically inferred from such examination is, that the liver and the right-ventricular blood are strongly saccharine *after death:* to show that this is likewise the condition *during life* requires another mode of experimenting. And notwithstanding, as it is fair to confess, nothing was to have been reasonably expected beyond a ratification

of our views, yet, on actually prosecuting the inquiry, it turns out that we can no longer overstep the strict letter of interpretation belonging to the original experiments.

A special attribute of the liver would appear to be, to form a substance which happens to be with extreme facility, by a process allied to fermentation, convertible into sugar. Considerations concerning the nature and the production of this substance under different kinds of diet, will be found in another communication. Suffice it to say, that the material in question appears to be always present to a considerable extent in the healthy state. It seems to have the power to resist, whilst located in the tissue of the living and healthy liver, transformation into sugar. With the destruction of life this power of resistance is at an end, and the organ then becomes speedily charged with the saccharine principle. Under natural circumstances the blood circulates through the liver, and escapes charged with but an infinitesimal amount of sugar: whilst, under certain unnatural states, the quantity of sugar becomes greatly increased. But, sugar being met with in the blood, does not necessarily arise from the exercise of a glucogenic function of the liver. The substance formed by this organ has only to pass into the blood-vessels to give rise to a saccharine condition of their contents; for, immediately it mixes with the blood it becomes transformed into sugar—a statement that may easily be verified by injecting it into the jugular vein of a living animal. I have repeatedly performed this operation on the rabbit and the dog. It rapidly gives rise to a strongly-marked diabetic condition of the urine. A little escape of the material belonging to the hepatic tissue into the blood whilst circulating through the liver, would rationally account for the trace of sugar spoken of as encountered in the circulation under ordinary circumstances. Such a view is not only in harmony with what has been shown to be the actual condition of the liver during life, but is strongly supported by what is observed as the result of disturbances of the circulation.

In my communication to the Royal Society, I have given the particulars of experiments which show that under violent struggling, or an interruption of the respiration sugar makes its appearance to a considerable extent in the circulatory system. If blood be removed from the carotid artery immediately on exposing the vessel, it is ordinarily found, in a marked degree, more saccharine than if removed five or ten minutes after the operation has been effected. Now, in exposing the carotid artery, on account of its contiguity to the pneumogastric nerve, considerable struggling and disturbance of the breathing is ordinarily produced, and in this way the liver is submitted to compression, and its vessels to congestion. That obstruction of the respiration determines the production of sugar in the system is most easy of demonstration. In one experiment I removed some blood by catheterism from the right ventricle of a dog. The animal's nose was then muffled, so as to render breathing difficult, for half an

hour, and thus occasion partial asphyxia. A second portion of blood was withdrawn from the right ventricle. An analysis of the two specimens indicated only seventy-nine thousandths of a grain of sugar per cent. in the first, and twenty-nine hundredths per cent in the second. These results will, I think, be admitted to accord with what we should expect under the view that has been taken. Compression of the liver, as in violent struggling, will naturally tend to occasion an escape of the contents of the hepatic cells into the circulation. Again, during obstruction of the breathing, the right side of the heart becomes gorged with blood, and the whole venous system congested. By the retardation in the flow of blood, and the distension to which the liver is submitted, there is I apprehend, produced an undue admixture between the contents of the liver-cells and blood-vessels. A transudation of liver material into the blood will immediately occasion the presence of sugar.

Depletion of the circulatory system also gives rise to the same result as the opposite state of which I have just spoken. It has been shown by Bernard, and I have noticed it myself, that if an animal be bled to death, notwithstanding the first portion of blood that escapes contains scarcely a trace of sugar, the last is pretty strongly impregnated with this principle. The explanation appears to me to be this. The removal of blood occasions a diminished tension of the vascular system, which favours the absorption of the fluids saturating or belonging to the tissues. There is, so to speak, a kind of drainage from the tissues of the body into the circulatory system, and with this drainage in the case of the liver, the special material found in this organ passes into the blood, and being immediately transformed into sugar, accounts for the phenomenon observed.

The precise condition in diabetes, it must admitted, still remains almost as obscure as ever. I have always thought that nothing much was likely to arise from investigations into the pathology of this disease until the physiology of the subject was placed upon a thoroughly substantial foundation. From what has been now disclosed, I venture to hope a considerable advance has been made and that with a few steps more, we may arrive at something definite regarding the nature of diabetes. I do not, in fact, despair of one day seeing our present obscurity cleared up. The artificial diabetes produced by puncturing the floor of the fourth ventricle has been considered by Bernard to result from an excitement of the hepatic circulation. My own recent experience does not enable me to confirm this opinion. I consider, at present, on reviewing the whole of the facts before me, that in the artificial and idiopathic diabetes, from some defect in the functional performance of the processes of the liver, the substance naturally produced by it is incapable of resisting transformation into sugar, as it does under normal circumstances.

The influence the nervous system possesses in relation to this matter has yet to be determined; but the state of the liver in diabetes

seems strictly to accord with that which is noticed when life has been destroyed. It has been sufficiently shown that a metamorphosis takes place immediately after death, which gives rise to the presence of sugar in the liver. Now, if an animal be killed by pithing, and the circulation be maintained by artificial respiration, the sugar produced in the liver is distributed throughout the system, and eliminated by the kidneys, so that in the course of an hour, or even less, the urine becomes exceedingly saccharine, apparently as much so indeed as after the operation of puncturing the floor of the fourth ventricle. I may observe, that this same occurrence has been noticed by Bernard, after destroying the functions of the brain by a violent blow on the head, and also after the exhibition of the woorali poison. If what I have been induced to surmise should ultimately prove to be the natural destination of the material which is transformed into sugar after death and in diabetes, the waste of adipose tissue which forms so prominent a feature of this disease receives an intelligible interpretation. But I hope to be enabled to say something further on the subject of diabetes hereafter.—*Guy's Hospital Reports, Vol. IV. p.* 291.

40.—ON HEPATINE.

By Dr. F. W. Pavy.

[From the preceding paper it is evident that something exists in the liver, from which sugar is susceptible of formation after death. This substance in 1857 was procured in a separate state by Bernard, and the author has since succeeded in separating it, and has observed the influence of several chemical re-agents on its transformation into sugar. This substance was called by Bernard "the glucogenic matter of the liver," but as this term conveys a wrong impression of its physiological use (whatever that use may subsequently be discovered to be), it it is better that it should be called simply "hepatine."

This hepatine, which forms an abundant production of the liver, appears, from the application of chemical agents, combined with the use of the microscope, to be located in the hepatic cells. It is only present in a normal or healthy state; so that its formation alone may be regarded as resulting from the exercise of a specific functional activity of the organ.

The properties that hepatine possesses are exceedingly marked and characteristic. When pure, it is a neutral, colourless, tasteless, and inodorous (solid) substance, apparently unsusceptible of assuming a crystalline form, and when precipitated with spirit presenting an amorphous granular appearance under the microscope. Its physical appearance differs according to the mode of preparation that has been adopted. The scum which collects on the surface of a solution of hepatine, heated to evaporate down, dries into an exceedingly brittle, semi-transparent, gum-like or resinous-looking body. In this state it

also resembles gelatine, but is much less tenacious, and easily separates from the surface on which it dries. When thrown down from its aqueous solution by alcohol, it falls as a white flaky precipitate, which soon subsides. And if this white precipitate be *quickly* dried, an opaque, white, friable mass is the result, which is easily reduced to a powder; but, if *slowly* dried, the particles seem to run or cohere together, and thus to form a hard, semi-transparent material, which is much more difficult to powder. It does not attract moisture from the air, but is soluble to an exceedingly large extent in water, although the process of solution occupies a considerable time before it is perfectly effected. When moist or in aqueous solution, it soon becomes mouldy on the surface upon being exposed to the air. The moderately concentrated solution presents an exceedingly milky appearance, which requires a very large quantity of water to remove. In an exceedingly concentrated state, however, it loses its resemblance to milk; so that, on evaporating a moderately dilute solution of hepatine to a highly condensed consistence, it gradually clears until it has become nearly transparent. On thus evaporating its solution, the hepatine is continually collecting in the form of a scum on the surface, and also to a certain extent accumulating on the bottom of the evaporating dish. Its insolubility in alcohol, and its power of resisting the action of a boiling solution of potash, are properties that have been made use of for effecting its quantitative determination in the liver. It is thrown down as a flaky precipitate, when, in a concentrated state, it is poured into glacial acetic acid or into a saturated solution of sulphate of soda. By dilution with a little water, however, the precipitate is in each case rapidly re-dissolved. Its reaction with iodine is exceedingly marked, and corresponds to that of dextrine, producing a wine-red or deep blood-red colour, which approaches to black when strong solutions are employed.

One of the most striking features of hepatine is its extreme susceptibility of transformation into sugar. Boiling for a short time with the sulphuric or nitric acid, and contact with animal substances that are capable of acting as ferments, readily effect this change. The saliva, the blood, and the tissue of the liver, all act with great energy in this way, especially at a moderately elevated temperature; hence the production of sugar in the dead liver, and even in the liver which has been deprived of its blood by a stream of water passed through its vessels. What I regard as an extremely interesting and possibly important fact, is, that contact with the saliva at the temperature of about 100°, leads to an almost instantaneous production of sugar. when the solution of hepatine is neutral; but, if a drop or two of either an acid, alkali, or a carbonated alkali be added, the change is to an astonishing extent interfered with. The hepatine which is precipitated by spirit from a plain decoction of the liver is acted upon with great rapidity by saliva, whilst the hepatine which has been precipitated from a potash solution of the liver, and which always carries

down a little of the alkali with it, offers such resistance that nothing more than an extremely tardy conversion into sugar takes place. Neutralised, however, with just a sufficiency of acid for the purpose, and the change is immediately effected, whilst if too much acid have been added the action is again checked or retarded. Seeing that the transformation of hepatine into sugar takes place so instantly and so largely upon the destruction of life, it is reasonable to presume that it always naturally exists in contact with materials which must have a constant tendency to act as ferments. The point that has yet to be learnt is the precise nature of the circumstances that check during life the change into sugar. For the solution of this question, it is probable, much more extended observation will be required. But, in the meantime, we cannot fail to look with interest upon the fact, that so slight a cause as the presence of a trivial amount of acid or alkali is sufficient almost completely to prevent the action of saliva in effecting a transformation into sugar. It may be just thrown out as a possible conjecture, that the hepatine is in a state probably of combination during life which enables it to resist the tendency of ferments to change it into sugar; but that with the destruction of life, this state is no longer maintained, and then its saccharine metamorphosis ensues.

Whatever in future may be definitely shown to be the particular purpose of hepatine in the economy of life, the facts I have brought forward lead irresistibly, in my own mind, to the conclusion that it is not formed for the object, as has been thought, of transformation into sugar. Experiment leaves no doubt that this transformation may be, and with great facility is, effected during life, but it is under conditions deviating from the ordinary or normal state.—*Guy's Hospital Reports, Vol. IV.*, 1858, *p.* 314.

41.—SUGAR AND DIABETES.

By Dr. William Budd, Senior Physician to the Bristol Royal Dispensary.

[At page 122 of our last volume will be found a case by Dr. Budd, illustrating the beneficial effects of a saccharine diet in diabetes—on the principle of compensating for the waste of that substance taking place through the urine. The present case here quoted is, if possible, still more striking than the other.]

Elizabeth Hilliard, a widow, aged 53 years, a diminutive person, and already for a considerable time the subject of diabetes, was admitted on the 11th of March, 1858, into ward 2 of the Bristol Royal Infirmary, where she still remains under treatment.

The symptoms which first arrested her own attention were frequent calls to make water, with great increase in the quantity passed, which amounted to several quarts daily; insatiable thirst, progressive weakness, and loss of flesh; and severe pruritus of the external parts. These complaints had come on rather suddenly about fifteen months before admission, in immediate sequel to severe mental anxiety. During the interval, she had been for some time an out-patient of the Infirmary, and subsequently, and for a period of rather more than two months, a patient at the Clifton Dispensary. She had never before, within her recollection, had any illness requiring medical attendance.

When admitted her debility and emaciation were extreme. The degree of wasting may be estimated by the fact that when placed in the weighing machine she was found to weigh only sixty-five pounds. She was unable to stand or even to sit up in bed, without being supported. The skin was peculiarly harsh and dry; the pulse 100. On the day after her admission, and for many subsequent days, the tongue was dry and brown. Her nights were much disturbed by calls to make water, and her thirst was very great. There was a hectic flush on the cheek, and she was much harassed by frequent dry cough and by pains of the chest. Although there were no physical signs of lung-deposit, my impression was that she was most probably the subject of tubercle.

She had reached, in fact, what Dr. Prout describes as "the last and usually the briefest" stage of diabetes.

On the day after her admission she was placed for five days on the ordinary (technically, "the middle") diet of the house. No medicine was given.

During these five days she passed six pints of urine daily, of sp. gr. 1040°.

On March 17, she was ordered to take ten ounces of the best white sugar daily, and was put on the following dietary:—

Bread (common) 12 ounces; meat 12 ounces; butter 3 ounces; greens 8 ounces; beef tea 1 pint; sherry 4 ounces;—to all which, two eggs were added on March 22. An ounce of cod-liver oil, which she took daily from the day after her admission until April 16, may also, I presume, be fitly included in this list.

On March 18, twenty-four hours after the adoption of this scheme, there was an increase of three pints in the quantity of urine passed, which now amounted to nine pints, of sp. gr. 1040°. Her thirst had also increased, and she was weaker. The pulse had risen to 116. In short, she was in all respects worse.

On the 19th, under the same treatment, the quantity of urine fell to eight pints, and the specific gravity to 1037°.

As, with the exception of the sugar, the new dietary differed from that for which it was substituted chiefly in containing much less amylaceous matter, it was tolerably clear that the sudden aggravation of the diabetic symptoms was due to the administration of the sugar.

Under the idea that the fault might be, not in the principle, but in the application of it, I did not withdraw the sugar, but merely reduced its quantity from ten ounces to five.

As the patient complained much of the inability to sleep, I at the same time, ordered five grains of compound soap pill to be taken at night. I may add that as this prescription seemed to answer it was continued for the next ten days when it was left off on account of constipation.

The opium probably had something to do with the sudden improvement which now occurred in the quality of the urine.

Be this as it may, the quantity of this secretion fell on the following day to five pints,—its specific gravity continuing at 1037°. On the next succeeding day five pints were again passed, of specific gravity 1036°.

Between this date and the 30th March, the urine fluctuated in quantity between five and a-half and six pints, and in specific gravity between 1037° and 1040°.

The only changes worthy of note in the patient herself were, that the tongue had become moist, and that she was somewhat stronger. She was able to sit up in bed, and could stand for a few moments without support. She relished the sugar, and it appeared to agree with her. Nevertheless, on being put in the weighing-machine on the 30th March, she weighed only sixty-four pounds; so that in sixteen days, she had lost one pound.

As from the history she gave of herself there was reason to believe that her loss of flesh for some time prior to her admission was more rapid than this, the true interpretation of this fact probably was, that some check was already being put to her downward progress.

In the next fortnight she steadily improved. On the 13th April, this note occurs in the journal of her case:—

"Weighed yesterday. 69½ lbs. Pulse 76; tongue clean and moist; skin soft and moist, having entirely lost its original harshness; gains strength daily; appetite good."

She was now sitting up for an hour or two every day. The cough and other chest symptoms had entirely ceased. The only change made in the treatment during this last interval was, that on the 30th of March the sugar was increased to six ounces daily, and on the 3rd of April a quinine mixture was ordered to be taken three times a-day. Half a pint of bitter beer was also substituted for the sherry. The urine, meanwhile, continued pretty steadily at six pints, its specific gravity ranging from 1035° to 1040°.

On the 20th—that is, seven days later—there is this further note:—"Weight, 72 lbs.; better in every respect; remains up six hours every day, and walks about."

In the week following she scarcely held her ground. In the early part of the week some relatives came to visit her, with whom she was on bad terms. A violent altercation ensued, and she was much

agitated during the night. On the day following the urine had increased more than a pint, and the specific gravity had risen several degrees. She continued to be very poorly for some days, and on the 27th she weighed only 71½ lbs., being half-a-pound less than the week before. Annoyances of the same kind have occurred to her several times since, and have always been followed by a similar change for the worse.

On the 24th the quinine was left off, and twenty minims of the dilute nitric and muriatic acids, in equal parts, were given three times a-day, instead. This last medicine she still continues to take.

On the 27th of April the sugar was increased to eight ounces, that is to say, to within two ounces of the quantity first prescribed. It is deeply worthy of remark that without any other change being made, the urine on the day following, instead of increasing, showed a large diminution. On the 25th, 26th, and 27th, she passed 6 pints on each day; the respective specific gravities being 1035°, 1036°, and 1034°. On the 28th of April she passed only 5 pints, of specific gravity 1034°. On the 29th, 4½ pints, of specific gravity, 1035°, and on the 30th, again, 4½ pints, of specific gravity 1034°.

On the 4th of May, her weight had further increased to seventy-three pounds: a point at which she still remains. Besides this, she is in all respects very much better. The tongue is clean and moist, the appetite is good, the bowels are regular, and the thirst is moderate. She is generally up the greater part of the day, and on fine days often passes much time in the infirmary garden. On the 3rd of May, after having spent a good part of the morning in that way, she went out, on foot, to visit a sick relative, and walked more than half-a-mile without fatigue.

During the last ten days the urine has only once reached six pints; the average quantity for the other nine days being somewhat short of four pints and a-half; and the average specific gravity for the whole period 1034°.

One case has occurred in the patient while under this treatment, which deserves to be specially mentioned on account of its physiological interest. When she came into the hospital, she was almost as dark in complexion as persons affected with bronzed skin. As the treatment proceeded she became visibly lighter, week by week, to such a point that it would be difficult to recognize her now as the same person.

The speedy subsidence of the chest symptoms equally deserves to be brought into prominent notice. We might, no doubt, attribute this to the opium employed. I would observe, however, that a precisely similar result occurred in the case of Snailum, to whom no opium was given. I withhold all comment from these facts, at present, beyond suggesting that they may both very possibly be eventually found to possess an interest extending far beyond the present topic.

In summing up the results detailed in the preceding narrative, the leading facts appear to be these:—

1. In the interval between the 30th of March and the 4th of May the patient gained nine pounds (a gain representing one-seventh of her whole weight), with a proportionate recovery of health and strength.

2. During the same period she was taking from five to eight ounces of sugar daily.

And 3. Notwithstanding this large daily consumption of sugar, instead of an increase, there was an abatement of the proper diabetic symptoms.

In connexion with these results, I shall confine myself at present to two remarks.

The first is the very obvious one, that whatever may happen in other cases, or whatever may be the ulterior issue of this one, these facts will abide.

The second is, that as it is impossible to suppose the sugar to have been without effect, the results here detailed must have been obtained either in consequence of its administration or in spite of it. If in consequence, then the facts are of extreme importance; but if in spite of it, they are scarcely less remarkable in the extreme opposition they offer to all we have hitherto been taught on the subject.

In regard to this point, Dr. Prout, who is confessedly one of the highest authorities in these matters, uses these remarkable expressions: "Every variety of the saccharine principle in its crystalline form, is absolutely inadmissible as an article of diet in diabetes. This rule excludes, therefore, at once all fruits, whether subacid or sweet, as well as every compound, natural or artificial, into which sugar enters. The practical importance of this rule is so great, that I am doubtful if it be neglected whether good can be obtained from any plan of treatment."

But here we have a diabetic patient eating from five to eight ounces of sugar daily, and not only rallying from a stage of the disease which Dr. Prout describes as being all but irretrievable, but adding in little more than a month a full seventh part to her weight, and becoming the while (what perhaps is most extraordinary of all) gradually less diabetic.

Antagonism more extreme than this it is impossible to conceive.

And there cannot, I think, be a more complete vindication than is to be found in it of the course I have taken in laying these facts in a simple manner before the public.

I may add, in conclusion, that in publishing them I do so in the full confidence that they will be regarded by the Profession generally as not without interest, in spite of attempts to disparage them, from whatever quarter they may come. Of this, at any rate, I feel very sure, and that is, that all such attempts will fail of their object when they come before us, seasoned by jests on homœopathy, having neither point nor good taste to recommend them.

P.S.—Since the foregoing notes were sent to press, this patient has

continued steadily to improve. Her weight, now (May 18), is 75 lbs. During the last five days her urine has varied in quantity from 4 pints to 4½ pints; in specific gravity from 1034° to 1037.° She is still taking eight ounces of sugar daily.—*Med. Times and Gazette, May* 22, 1858, *p.* 522.

42.—ON THE SACCHARINE TREATMENT OF DIABETES.

By Dr. George Corfe.

Dr. Bence Jones has reported two cases of diabetes in which sugar, combined with bread, or potatoes combined with porter were severally given, and he has furnished us with the unfavourable results of such articles of diet. In the first case, bread and potatoes increased the amount of sugar in the urine; when these were suspended the sugar disappeared; sugar was then given, and bread withheld. "This was continued four days, and no sugar occurring, a small quantity of bread was also given; much sugar again appeared." The diet otherwise was animal only. In the second case the results were even more unfavourable. Bread and sugar were given with the exception of two or three days, when the amount of sugar voided was increased thereby; so that instead of any good result being realised, there was some positive injury done from these dietetic experiments with bread, sugar, and beer; the trial, therefore, under the circumstances cited by this gentleman, cannot be urged as a proof of the value or otherwise of sugar as an article of diet in glucosurie. He sums up his observations on such treatment in the following words:—"The analyses of the urine in the two cases I have given, the one in the second stage, and the other in the third stage of diabetes, will show what a diet containing sugar and bread does effect in increasing the amount of sugar in the urine; and from all I have seen of the disease, it is better practice to follow the indications of lessening the amount of sugar in the urine, than to endeavour to cure the disease, as I have known a homœopath try to do, by a specific of sugar and starch." Permit me to make an observation or two on this line of experimental treatment of an obstinate disease. Dr. Jones must be well acquainted with the several trials which the continental physicians have made of the influence of bread in this intractable malady, and of the invariable increase of sugar in the urine whenever this article of diet was taken. Drs. Bouchardat and Sandras in their brochure, "De la digestion des matières feculentes et sucrées," published in 1845, emphatically urged a total abstinence from bread as the best and surest method of reducing the amount of sugar. Bernard, Piorry, and Andral have subsequently confirmed this opinion; for while the two latter physicians ascertained that sugar given alone lessened considerably the glucose tendency, no one who has had any experience in this disease can doubt

but that bread and fermented liquors, as porter and ale, &c., promote an increase in the amount of sugar.

[Messrs. Bouchardat and Sandras have ascertained that to a given quantity of food which contains two pounds of fecula, the patients require about fourteen pounds of water to enable them to digest it, and from this amount nearly sixteen pints of urine are voided.—*Gazette Medicale.*]

With these facts before him I would ask, what possible good result could Dr. Jones anticipate from such a system of experimental feeding on starch, as that which he pursued in the two cases he brings forward in his late communication?

It does appear worse than needless, nay, one may add, it is almost unjustifiable to resume these experiments after the signal failure which attended them in the French capital some years ago. Dr. Jones urges us "to follow the indications of lessening the amount of sugar," and yet he administers articles of diet, such as bread and beer, which other authorities, in the treatment of this disease, have repeatedly shown will increase the amount of sugar. With the utmost deference to Dr. Jones, I would suggest to him that he must have added greatly to the derangement of the stomach in both of the cases he adduces, by the injudicious use of yeast in the form of bread and beer, without any vegetable food whatever, and thus have aggravated the disease by the administration of articles well known to induce an excess of sugar, a practice diametrically opposed to the principles enunciated by him in the above quotation.

It often happens that in the progress of a case of diabetes, there will be a temporary suspension of sugar, just as there is often a temporary appearance of this element in the urine of a healthy person who is not suffering from glucosuria. Sugar is eliminated from other organs under disease, as well as from the kidneys in diabetic patients. The "melleous" breath in chronic thickening of the mucous coat of the stomach and small intestines; the saccharine expectoration of chronic bronchitis, and even in tuberculosis; the presence of sugar in the urine of some cases of albuminuria following acute rheumatism, and also in lactation; and lastly, the recent notice of Drs. Gibbes and Johnston of Birmingham, that sugar is present in infantile pertussis and hysteria, all tend to prove that the vice is most probably seated in the pneumogastric nerve.

The temporary disappearance of sugar in Dr. Jones' cases, while under a specific treatment, should not, therefore, be over-estimated or construed by him into a proof of the value of any line of diet, unless the collateral symptoms improve also, which was not the case. I have known the urine to descend as low as 1012, and to contain no traces of sugar under the saccharine vegetable treatment shortly to be noticed, and yet the weight has risen in a few days to the former standard, and the sugar has again appeared. There is some analogy here to the

temporary or permanent existence of albumen in the urine under other diseases. We are now quite assured that the presence of this element in the urine is not a bare evidence of Bright's disease. It has been found to come away in cases of delirium tremens, puerperal mania, pneumonia, and in some cardiac affections, &c., where we have had no reason whatever to suspect renal disease. Here also, as in diabetes, the specific gravity of the urine must form our main test of any organic change in the kidneys, for while the urine secreted in a fasting condition (urina sanguinis), and that secreted after a full meal (urina chyli), vary considerably in weight during health, they are found to be scarcely altered in specific gravity when secreted by kidneys suffering from unequivocal "Bright's disease." Rayer and Traube ascertained that no sugar existed in the urina sanguinis of some diabetic patients, when they obtained it in large quantities from the urine which had been secreted by the same persons during digestion (urina chyli).

It has often occurred to my mind that of those few diseases which are treated better out of our hospitals than others, diabetes is one in which far more real good is done in private than in public practice. We are all aware how essential it is to lay down and maintain the most rigid line of dietetics in such cases, and how much more available this curative branch is than the mere therapeutical treatment. Those practitioners who have had extensive opportunities of mingling with the sick poor, know, to their sorrow, the little self-control this class of the community exercise, whenever a craving for some special indulgence comes over them, either in food or in drink; and how frequently some positive benefit afforded by the former is overthrown and undone by the other, in their yielding to a whim or a fancy for some improper articles of diet. On this account, therefore, diabetic patients are, of all classes, the most unsatisfactory to treat in hospitals; their power of self-denial is so feeble and they are accustomed at their own homes to give the bridle so freely to their own appetites, that I am persuaded that a large number of such persons in hospitals, when deprived of bread, will beg or steal this article of diet rather than submit to a total abstinence from fecula, or be compelled to eat diabetic bread. Whereas among a better-informed class a few words of advice, explaining our views in that part of the treatment peculiarly dietetic, are oftentimes met by the most attentive execution of the wishes of the physician.

In Dr. Jones' communication he alludes to a case lately reported by me in the 'British Medical Journal,' (Retrospect, vol. xxxvii. p. 126), in which 1 oz. of sugar (it should have been stated barley-sugar), and 1 oz. of honey were given by me daily, and it is added, "he, Dr. Corfe, considers with advantage." In reply to this trite notice, allow me to remind that gentleman that I offered no opinion on the results of the treatment, nor did I venture to express "a belief" about the matter;

I adopted the suggestion put forth by Dr. Budd, "not to draw conclusions from single instances." I refrained from any comment, only observing, that "upon a review of 120 cases of diabetes, it had never fallen to my lot to witness such a marked, rapid," and I may now add, abiding, "improvement, by any other line of treatment."

Instead, however, of following Piorry, Andral, or Dr. Budd's purely saccharine treatment, by the administration of cane sugar only, I resolved on the adoption of a diet into which a large amount of vegetable food should be introduced, and a preference given to that class of vegetables which is known to contain grape sugar, as parsnips, turnips, &c. I confess the treatment was novel to me, but I ventured on it under the gloomy appearances which the case presented in all its urgent symptoms, feeling assured that in a few more weeks the sufferer would, otherwise, be on the verge of the grave. The medical treatment was similar to that of a case of obstinate dyspepsia, the mineral tonic was increased to five grains a dose; a total abstinence from all yeast in fermented liquors, bread, &c., was enjoined as well as tea, and a liberal allowance of claret, rum, coffee, vanilla, chocolate, and hop tea. The amount of sugar was kindly ascertained for me each date of the report by Professor Heisch, by means of an improved Biot's saccharometer. So far, this case and two others, which I will now allude to, were treated differently from either of those under Drs. Jones, Williams, or Budd, as there was no allowance of bread, malt liquor, nor of loaf sugar as in their patients.

In conclusion, I would observe, that if we are disposed to supply the system with that element which a vice in the assimilative organs is deriving from animal equally as well as from vegetable food, if we are assured from long-continued observation, that sugar will be separated under any dietetic treatment, that patients will lose in weight, grow thin, and ultimately sink under the modern orthodox regimen, then I do insist upon the propriety of affording natural supplies of sugar in the form of sweet vegetables, in preference to that artificial administration of loaf sugar, which so soon nauseates the stomach; at the same time, I view it to be a perfectly unjustifiable act, with our present knowledge of the pathology of the disease, to administer yeast in any fermented article of diet, such as bread, porter, ale, &c.

Since the above particulars were compiled for the press, I have had two further opportunities of testing the same line of treatment. In the first of these two the disease was in the last stage, and extensive ravages by tuberculosis had already been made in the summit of one lung, notwithstanding the general amendment in both cases was decided in its nature. The thirst subsided, and with it the quantity of urine voided, the specific gravity fell, the skin in both instances lost that intense and painful sense of dryness, the spirits became more buoyant, and up to the present time the treatment is unequivocally telling more favourably than any previous line of practice had done.

When the present plan commenced, the amount of sugar was ascertained to be about twelve drachms to each pint.

I would remark that, as many patients have complained of the dry, insipid nature of Camplin's biscuits, and some of them have been compelled to give them up, and resort to unfermented bread, I have thought that Martin's receipt for making gluten bread might prove acceptable to those of your readers who have cases of diabetes under their care, especially as the formula has never been published in this country that I am aware of, and perhaps some person may be induced to give it a trial; it is represented to be a very palatable article, though I should prefer the use of it as unfermented bread.

The process was first introduced by Mons. Martin, of Vervins. About 40 parts of water to 100 of best flour are mixed as in ordinary paste making; this paste is left for an hour or so, in order that the gluten may be dissolved; but, if the flour is coarse, it must remain for a longer time, varying from two to six hours. It is now to be washed in order to deprive it of the starch, and to obtain its gluten. A tub, with a wire sieve placed over it, should be ready; upon this sieve the baker puts a lump of paste of any given quantity, and water from a perforated tube or a rose attached to a tap, is now made to play upon the paste, which is worked by the hand until the gluten forms into filaments, and the water is no longer milky. From every pound of flour thus treated, a quarter of a pound of gluten should be obtained. The gluten must be used as soon as possible, otherwise it it decomposes, and does not knead well; to every pound of gluten, one quarter of a pound of flour must be added, with a little yeast and salt. When the dough is risen, bake it in a moderately heated oven. This makes a very light bread, of an agreeable taste and smell.—*Med. Times and Gazette, Sept.* 18, 1858, *p.* 292.

43.—ON GLYCOGENESIS.

By Dr. John Sloane, House Surgeon to the Leicester Infirmary.

(Read before the Leicester Medical Society.)

[The following important facts regarding what is called glycogenesis, or the formation of sugar, are from M. Bernard's 'Leçons de Physiologie Expérimentale,' a work which has never yet been translated into the English language. They bear upon the *rationale* of the saccharine treatment of diabetes.]

Glucose, the variety of sugar found in the urine of diabetics, is generated in the livers of animals throughout the animal kingdom, almost wholly irrespective of the nature of their food. The glucose secreted by the hepatic cells passes into the hepatic veins, thence into the inferior vena cava, and through the right side of the heart to the lungs, where, being exposed to the atmosphere, it sometimes completely disappears. M. Bernard has found sugar in the livers of

mammals, of birds, of reptiles, of fishes, of molluscs, and of articulated animals. He has found it in omnivorous, herbivorous, and carnivorous animals. That the secretion of sugar is independent of the nature of the food, he proves by many experiments, of which I shall mention the following. He fed dogs exclusively on flesh for six or eight months; and when they were killed, at the expiration of that period, he found as much sugar in their livers as in those of dogs fed upon mixed diet. Owlets taken in their nests were fed exclusively on raw bullock's liver for three months, and were then killed: their livers always contained the normal quantity of sugar. Two dogs were fed solely on flesh, three on both flesh and bread, and two on amylaceous or saccharine food; they were all killed at as nearly as possible the same period of digestion, and the results of the chemical examination of their livers showed that the quantity of sugar secreted did not depend on the nature of their diet.

Rollo recommended the use of fat for diabetics. M. Thenard and Dupuytren made them eat lard. We have fed dogs with lard and axunge; and we have found this very curious fact, that, under the influence of this alimentation, the sugar diminished in the liver absolutely in the same manner as if the animal had been kept fasting. In dogs to which M. Bernard has given nothing but pure water, he has found the secretion of sugar kept diminishing, and it ceased to appear about three or four days before its death. For the first thirty-six hours, the quantity continues considerable, but during the following days it diminishes very rapidly.

A dog, having fasted thirty-six hours, had a copious repast of boiled sheep's head, and, three hours afterwards, was killed. The blood in the portal vein, previous to its entrance into the liver, contained no trace of sugar; whereas, in the blood from the hepatic veins, there was a considerable quantity. This experiment, writes Bernard, would alone suffice to cause one to admit, as a natural and necessary conclusion, that the sugar is produced in the liver; yet we have accumulated proofs of every kind about this proposition; and we have shown that the hepatic tissue constantly contained sugar, and that it was the only tissue of the body which offered this character.

In an animal fasting, the blood which arrives at the liver presents no trace of sugar; that which leaves it contains a considerable quantity. Inversely, the blood which arrives in the lung contains sugar; and that which leaves it presents no trace of this substance. The sugar in this physiological state remains hidden between the liver and the lung, and does not show itself at the exterior. This statement is true only in an animal fasting. When the digestion commences, the quantity of sugar gradually augments; yet during the two or three hours following the ingestion of aliment, notwithstanding the increase of the saccharine secretion, all the sugar can be destroyed before it arrives at the arterial system; and it is only after the lapse of time that the production of sugar surpassing the limits of destruction

becomes temporarily excessive in the organism. At this period of digestion, one finds sugar in all the vessels of the body, arterial and venous, and even in the renal arteries; but the proportion is too slight for any of the sugar to pass in the urine. Yet we shall see that, under certain physiological circumstances, the quantity of sugar can be increased to the point that it passes off in the urine without the animal being diabetic. Under the ordinary circumstances of digestion, this species of saccharine overflowing is manifested equally with animal or amylaceous diet, and it lasts about three or four hours. It is not less than six or seven hours after a meal that the excess of sugar in the blood commences to disappear, and that the equilibrium between its production and its destruction tends to re-establish itself as before digestion. This species of oscillation, which the glycogenic function presents, it is very important to know: for in the pathological state (diabetes) we find exactly the same phases, with the exaggerations we should expect in this malady. Different observers—Rayer in France, and Traube in Germany—have remarked that there are diabetics who do not pass sugar in their urine, except at the time of their digestion; and that, in the interval, their urine does not contain sugar. This phenomenon can be reconciled very naturally with the physiological fact which has been pointed out to you. There is nothing essentially different between the normal state and the pathological symptom, save the intensity of the phenomenon caused by a deviation of vital activity.

The sugar is formed from the albuminous substances; and this sugar is the result of the physiological action of the liver upon those principles, which are divided so that their oxygen, hydrogen, and carbon, are grouped so as to form sugar, whilst their azote enters into other combinations, and probably into the azotised principles of the bile. One does not know, indeed, any other origin for the saccharine matter, which cannot be produced in the intestine by digestion. Experiment has shown us that, during alimentation, by means of albuminous substances, the intestine and the blood of the portal vein never contain saccharine matter of any kind. Neither gelatine nor flesh produce saccharine matter in the intestinal tube by the known digestive processes. The amylaceous matters taken as food enters as sugar into the portal vein, and, arriving at the liver in this state, is then destroyed by this organ, and changed into another matter, which has every appearance of a fatty substance converted into an emulsion *par une matière protéique spéciale*. We have said that the sugar introduced into the intestinal tube does not augment the quantity of this matter contained in the liver, but that it is there destroyed, and causes the appearance of an emulsive substance. That the sugar introduced into the intestinal canal does not augment the quantity of this matter contained in the liver, M. Bernard shows by the following experiments. He takes two rabbits, whose urine he first finds, by testing, to be free from sugar. Into the stomach of one

he injects a quantity of sugar in solution, with some ferrocyanide of potassium. Beneath the cellular tissue of the other he injects half the quantity of an exactly similar solution. He examines their urine an hour afterwards, and he finds in that of the first not the least trace of sugar, whilst the urine of the second presents it in considerable quantities. But you may say that this difference may be accounted for by the intestinal absorption being less rapid than the subcutaneous: but in both the ferrocyanide of potassium was readily detected in the urine. This will prove that the absorption is equally effectual in the intestine as under the skin, but that, in the first case, the solution has abandoned one of its constituents, the sugar, in traversing the liver; whereas this has not taken place in the second instance. He arrives at similar results in the following experiments. Through a small opening in the abdomen of a rabit, he injects a quantity of the same solution into one of the branches of the portal vein; and into the jugular vein of another rabbit he injects the same quantity of the same solution. It is clear that, in this mode of operating, we cannot have any difference in the absorption, as in both cases we introduce the substances directly into the blood. Nevertheless, we obtain exactly the same result; that is to say, that in the rabbit in which we injected by the jugular, the sugar has passed into the urine with the ferrocyanide of potassium, and with very great rapidity; whilst in the rabbit injected by the portal vein, the ferrocyanide of potassium alone will have passed into the urine, where one cannot find the least trace of sugar. These experiments are very conclusive. Bernard proves by experiment that starch, taken as food in the intestine by the influence of the pancreatic juice, becomes converted into sugar; and this passes into the portal vein. That sugar is destroyed by the liver, receives further confirmation, he states, by the facts known in the fattening of cattle. You all know that animals fatten most by the use of food in which starch predominates; that the geese and the ducks, in which the fat livers are artificially produced, are gorged with a *pâté* of maize or other amylaceous food; that the fat formed by an animal is not in proportion with the adipose matter which it takes; that, on the contrary, the animals which only eat fat, far from becoming fat, get lean rapidly. Hereafter it is not only the biliary secretion which we shall have to look upon in the liver; it has two other functions of capital importance—one the production of sugar, which is dependent upon the aliment containing the albuminous matters; the other, the production of fat, which is dependent upon the amylaceous and saccharine matters in the food.

Cane-sugar is never destroyed; it is constantly eliminated by the urine when it is injected directly into blood; but this sugar, when in the intestine, is in part, at least, transformed into glucose. The latter, on the contrary, injected into the blood, can be destroyed in certain proportions.

When we prick the mesial line of the floor of the fourth ventricle,

in the exact centre of the space between the origins and of the auditory and pneumogastric nerves, we produce an exaggeration of the hepatic (saccharine) function, and of the renal secretion ; if the puncture be effected a little higher, we very often only produce an augmentation in the quantity of the urine, which then frequently becomes charged with albuminous matters ; while, if the puncture be below the indicated point, the discharge of sugar alone is observed, and the urine remains turbid and scanty. Hence it appears that we may distinguish two points, of which the inferior corresponds to the secretion of the liver, and the superior to that of the kidneys. As, however, these two points are very near to one another, it often happens that, if the instrument enters obliquely, they are simultaneously wounded ; and the animal's urine not only becomes superabundant, but at the same time saccharine. The urine becomes saccharine in from one to two hours after the operation, but seldom continues for more than a day.

The secretion of sugar is not under the direct influence of the pneumogastric nerve ; for if it be divided before irritating the floor of the fourth ventricle, sugar still appears in the urine. Bernard believes that the influence is transmitted by reflex action through the ganglia of the sympathetic.

There is a phenomenon which is manifested, for example, when, after fasting a certain time, a great quantity of sugar is taken. The intestinal absorption then proceeds with extreme rapidity. A great quantity of sugar arrives in mass in the liver ; the mechanical circulation much prevails over the chemical ; the sugar is poured into the general circulation in proportion much greater than occurs in the normal state ; and it passes then into the urine, where its short-lived presence can be found for a certain time.

M. Bernard, after a great many experiments in reference to the subject, has proved that there is a species of election in the excretion of matters which pass out of the organism. Sugar is eliminated in two ways only—by the kidneys, and by the mucous membrane of the stomach. When sugar is injected into the blood of an animal to saturation, and puts it for a time into a state of diabetes, we do not find sugar in the saliva, in the tears, pancreatic juice, bile, nor perspiration ; whilst the urine and gastric juice contain it in proportions more or less notable. These results entirely resemble those obtained in diabetic patients. Lehmann states, however, that he has obtained sugar from the saliva of a diabetic. The presence of sugar has been pointed out in the expectoration of diabetics. Bernard admits that sugar can be had in notable quantity in the expectoration. But, he writes, we must not confound the bronchial mucus which these patients, almost always phthisical, in the last stage of the disease expel in abundance, with the salivary secretion properly so called ; it is the mucosities formed in the lung which contain the saccharine matter. Nevertheless, this fact is not constant ; for M.

Rayer has reported to the Society of Biology a case in which the expectoration of a phthisical patient examined by M. Wurtz did not contain sugar. Bernard proves by the following experiments the statements regarding the election in excretion of matters which pass out of the organism.

He takes a dog with a parotidean opening, into which he inserts a tube. Nothing flows by this tube, which proves that the secretion is not continuous. By putting in the mouth some vinegar he excites the flow of saliva, which passes out of the tube rapidly in large drops. He next injects into the jugular vein of the animal a solution containing sugar, prussiate of potash, and iodide of potassium. Immediately after this injection the salivary secretion is again excited in the same way. The saliva is received into three glasses. One is examined for sugar, and none is found. The sugar, therefore, does not pass in the saliva. The second is examined for prussiate of potash, and it is not present. The third is found to contain iodide of potassium. This substance, then passes immediately into the saliva, whilst the prussiate of potash and the glucose, equally soluble, cannot be found. In the saliva extracted before the injection, none of the substances exist. In the urine of the same animal after the injection the prussiate of potash is found in considerable quantity, and the iodide of potassium in small proportion. As regards the sugar, there is none yet, but we shall find it presently. It requires an hour or more for the sugar to appear in the urine.

The urine then eliminates all these substances in a manner more or less rapid. The prussiate of potash appears first and the glucose last.

There is another secretion in which the presence of sugar can be found ; this is the gastric. The passage of the sugar into the stomach has surprised most of the observers who have seen long since that when diabetics vomited, although they had eaten nothing but flesh, the vomited matters were saccharine. When it was believed that diabetes proceeded from a perversion of the digestive functions, it was considered that the flesh was changed into sugar in the stomach. But one need not now be mistaken ; the flesh is not saccharine. Bernard himself has observed that, in diabetics who vomit fasting, in the vomited matters the presence of sugar could be found. But this has only occurred when the disease is at its greatest intensity ; and in all those cases, even in the animals which have been rendered artificially diabetic, it is much more difficult to obtain the passage of glucose into the gastric juice than into the urine.

The sugar is formed, as we have seen, at the expense of the albuminous substances. In the healthy man it is clear that a part only of these matters is consumed for this purpose. The diabetic who forms much sugar expends a very large quantity of azotised material; the blood is impoverished ; and, although the patient eats enormously, he gets thin like a man badly nourished. The liver takes in a man-

ner the ration of the other organs, which undergoes a considerable attenuation, because the albuminous elements are transformed into sugar.

M. Bouchardat has proscribed the use of amylaceous and saccharine matters in the food of diabetics. The facts which Bernard has himself witnessed in the practice of M. Rayer prove clearly the utility of azotised aliment. In the regimen of these patients, writes Bernard, vegetable aliments ought to be forbidden, as it is evident that they augment the functional activity of the liver. You know, also, that they are excitants of the kidneys; that they are much more diuretic than animal matters. Thus all the herbivora pass much more urine than carnivorous animals. In the azotised regimen diabetics have the advantage of food which is not diuretic.

I have at great length reminded you of M. Bernard's views regarding the formation of sugar in the animal economy. As some of them are of so novel a character, and so little in accordance with the notions formerly held, I have thought it advisable to mention the experiments upon which he founds his opinions. That they will, upon further investigation, be more or less modified, is not improbable; but they have been very generally received by the most distinguished physiologists and pathologists.

From M. Bernard's investigations. we learn the following facts of importance in reference to the saccharine plan of treating diabetes.

1. Sugar may be rationally administered to diabetic patients, inasmuch as the sugar found in the general circulation is almost always secreted by the liver, and as sugar introduced into the intestinal tube in its passage through the liver is there altered and converted into an emulsive substance, which serves to fatten these patients, and thus to counteract their tendency to emaciate.

2. Substances which contain glucose—such as honey and fruits, should be given to diabetics in preference to those containing cane-sugar, because the latter is not destroyed when injected into the blood, but is constantly eliminated by the kidneys; whereas glucose can be destroyed in certain proportions.

3. Cane-sugar would be beneficial to a certain extent; as when taken into the intestine it is in part at least transformed into glucose; but if given in too large proportions to be thus completely transformed, the disease would be probably aggravated by the presence in the blood, and subsequent excretion by the kidneys, of the former variety of sugar.

4. The glucose should be given in moderate quantities at a time, and frequently, rather than in large quantities at long intervals; because, when much sugar is taken fasting, it is absorbed too quickly to admit of its complete destruction in the liver. and it passes into the general circulation, whence it is eliminated in the urine.

Cases of Diabetes treated on the Saccharine Method.—[The following statements are contained in a letter from M. Piorry to Dr. Sloane :—]

"It is now a year at least since I treated with success by abstinence from drinks (*boissons*), and by the use of sugar in large doses, a patient under my care. This woman passed from twenty to thirty *litres* of urine, and took an enormous quantity of food. She had been in many hospitals, but nowhere had she obtained any relief. Put upon the preceding regimen, she passed scarcely two *litres* of urine in the twenty-four hours, and the urine did not contain more sugar than when she took none of it into her stomach. A note was addressed by me to the Institute, and was immediately accepted. Some months afterwards, this poor patient again took a large quantity of drinks, ceased all treatment, and went into another hospital, where she succumbed. I have not since had occasion to treat a case of true diabetes.

"The abstinence from drinks is certainly a very useful therapeutic agent. In this case, as well as in albuminuria, I have employed it with very great advantage. You will find some facts which I have related in my treatise on practical medicine, in the articles where I speak of glucosuria and albuminuria."

[Dr. Sloane next relates the following cases :]

Case 1.—Nov. 22nd. Elizabeth Lawrence, aged 23, residing at Earl's Shilton, was admitted under the care of Mr. Paget on October 20th. She is a framework-knitter, of healthy parentage, and has suffered no privations. She has now a sister in the Infirmary with diabetes mellitus. She is very temperate. She began to suffer from amenorrhœa three years ago; shortly afterwards her vision began to fail, and she thinks that for about the last year she has been passing an inordinate quantity of urine. She appears to be a delicate, badly developed girl, and seems younger than she really is. She has no pain, sleeps well, and feels very feeble. There is double cataract. The tongue is clean and moist; she has only eight teeth ; the others "rotted away" about four years ago. The gums are congested, but do not bleed. She has much thirst; her appetite is extremely good ; the bowels are regular without medicine. The lungs seem healthy. Pulse 72 rather small. There is no cardiac murmur. Not the least œdema of the feet or ankles is observed. The skin is dry and harsh. Her temper has been more irritable than formerly for the last six months. Hepatic dulness extended four inches and a half in a vertical line with the right nipple.

Since admission, she has been taking five grains of citrate of iron three times a-day, and has had the full diet of the infirmary, with a pint of beer and a mutton chop in addition. She passed during the last twenty-four hours five pints of urine. I examined a specimen passed five hours. It was clear like water, of acid reaction, of specific gravity 1040, and contained no albumen ; chlorides were abundant. Each fluid ounce of this urine contained fifty-six grains of sugar, as calculated by Garrod's glucometer. She was ordered to take half

a pound of treacle daily; no other change being made in her medicine or diet.

Dec. 15th. During the last twenty-four hours she passed nine pints and a half of urine, nearly double the quantity she evacuated before she began to use the treacle. Each fluid ounce contained fifty-six grains of sugar, and the specific gravity was 1043. She had, however, gained three pounds in weight.

Jan. 28th, 1858. She passed eleven pints of urine during the last twenty-four hours. The specific gravity was 1046; and each fluid ounce contained eighty grains of sugar. She had since last report gained four pounds and a half in weight. She omitted the treacle and the medicine also. She was ordered to take two teaspoonsful of cod-liver oil and twenty-five minims of tincture of muriate of iron three times a-day, and to have a pint of milk daily, in addition to the diet mentioned in my first report.

Feb. 28th. She passed four quarts of urine in twenty-four hours. The specific gravity of some passed this morning is 1045; each ounce contains seventy-seven grains of sugar. There has been no change in weight since last report. Perhaps I should mention that, ten days ago, I examined a specimen of her urine the specific of which was 1042, and each fluid ounce contained sixty-three grains of sugar. She was ordered to omit her present diet, and to take instead half a pound of bran-biscuit prepared in accordance with Mr. Camplin's directions, tea without sugar, one pint of milk, three ounces of wine, a mutton-chop, and one pint of beef tea. No other article of food was allowed. Her medicine was continued as before.

March 2nd. During the last twenty-four hours she has passed five pints of urine. Some that she evacuated this morning had a specific gravity of 1046, and contained fifty-five grains of sugar in the fluid-ounce.

April 9th. She has continued to improve steadily and gradually since last report. She passed only three pints of urine in the last twenty-four hours, and each fluid ounce contains 40 grains of sugar; specific gravity 1046.

Case 2.—Nov. 24th. Ann Coleman, aged 25, residing at Great Glenn, was admitted under the care of Dr. Crane on Sept. 15th. She is a servant, of healthy parentage and of temperate habits. She suffered some privations when a child, but not lately. Four years ago, she had an attack of typhus fever, from which she did not completely recover for twelve months. She was five months in bed, and for the remaining seven months was very weak. About twelve months ago, she began to suffer from her present illness, and has since been gradually becoming worse. She is small of stature and imperfectly developed, and appears to be much older than she really is. The cheeks are red; the veins of the face are unusually visible. She has no pain, sleeps badly; feels very weak; has observed no change in her temper; the special senses are unimpaired. The tongue is clean and moist; she

has a good set of teeth. She has had no inordinate thirst for the last three weeks; previously, since her seizure, she had been very thirsty. Her appetite is very good—abnormally so. The bowels are regular. There is no cough; the lungs seem to be healthy. Pulse 72, small, feeble. There is no cardiac murmur. The skin is dry and harsh. There is no œdema of the feet or ankles. Hepatic dulness extends three inches and a quarter in a vertical line with the right nipple. She weighs five stone and five pounds and a half. The urine is clear, like water, of acid reaction, and of specific gravity 1040; it contains no albumen; chlorides are present. The quantity of sugar, calculated by Garrod's glucometer, is found to be seventy-six grains in each fluid ounce. She passed four quarts of urine in the last twenty-four hours. She is taking daily half a pound of common biscuit, two eggs, one pint of milk, three ounces of wine, one pint of beef-tea, half a pound of light pudding, and the common diet of the Infirmary. She has been treated with baths every other day at a temperature of 96° Fahr., and with five grains of compound soap pill three times a-day. She believes that she has derived benefit from this plan. She was directed to continue her present treatment and diet, and to take in addition half a pound of treacle daily. After three days the treacle was discontinued, as it induced nausea, and she said it made her feel very thirsty. She was ordered to take half a pound of honey instead.

Dec. 8th. The biscuit was omitted, and half a pound of bread substituted for it. She is now beginning to dislike the honey; but she was fond of it at first.

Dec. 20th. During the last twenty-four hours she passed seven quarts of urine, being three quarts more than she voided in the same period before she began the saccharine plan of treatment. The specific gravity of the urine was 1043, and each fluid ounce contained seventy-seven grains of sugar. She has lost two pounds and a half in weight since the date of my first report, and feels much weaker since then, and is much more thirsty. She was ordered to omit the honey.

Dec. 25th. The specific gravity of the urine was 1042; each ounce contained forty-five grains of sugar. She now began to complain of some cough. She was ordered to omit the baths and the opium, and to take two teaspoonfuls of cod-liver oil three times a-day in a dose of common cough mixture.

Feb. 20th, 1858. During the last twenty-four hours she passed five quarts of urine, of specific gravity 1040; each ounce contains forty-eight grains of sugar. She is now very thirsty, and gradually becoming weaker. She was afterwards ordered the bran biscuit as in the preceding case, but after two days she refused to take it. She was, therefore, discharged.

Case 3.—Nov. 28th, 1857. Hannah Lawrence, aged 14, residing at Earl's Shilton, was admitted under the care of Dr. Shaw on November 10th. She is a servant; has suffered no privations; is temperate;

and has had no previous illness. She is sister to Elizabeth Lawrence, who is also suffering from glucosuria, and who is at present in this infirmary.

About three months ago she began to pass more urine than normal, and has since been gradually getting worse. She cannot account for her illness. She appears to be well grown, but is slender. She complains of pain in the left hypochondrium at the margin of the ribs in a line with the left nipple. It is sometimes present for an hour, and may be absent for two days; but these times are liable to vary much. She feels weak. The special senses are not impaired. The gums are not spongy; the teeth are good, two only being carious. The tongue is clean and moist. She has much thirst; her appetite is good—inordinately so as compared to the state of health. The bowels are regular without aperient medicine. She has had a cough for the last week; no lesion of lungs can be detected on examination; she raises no phlegm. Pulse 104, of moderate fulness and force; there is no cardiac murmur. The skin is dry and harsh to the touch. She had œdema of the feet for a week previously to admission; this has since disappeared. Hepatic dulness extends from an inch below the nipple downwards three inches and a quarter. She has never menstruated. Since admission she has taken Griffiths' mixture three times-a-day. She has the full diet of the infirmary, with half a pound of bread and three ounces of wine in addition. She weighs five stone and four pounds. During last twenty-four hours she has passed nine pints of urine, which contains sixty-four grains of sugar in each fluid ounce, as calculated by Garrod's glucometer. The re-action of the urine is acid; the specific gravity 1040; some opacity, produced by heat, disappears on the addition of nitric acid; the chlorides are scanty. She was ordered to take half a pound of treacle daily; no other change being made in her medicine or diet.

Dec. 20th. She passed during the last twenty-four hours the same quantity of urine as at the date of the last report. She has gained one pound in her weight. The specific gravity of the urine is 1045, and each ounce contains sixty grains of sugar.

Jan. 16th, 1858. She has lost four pounds in weight since last report. The quantity of urine passed in twenty-four hours is five quarts, each ounce contains seventy grains of sugar; specific gravity 1035. She has become much weaker since admission. She was discharged at her own request. She died on Feb. 14th at her home in the country.

Remarks.—In the first of these cases—that of Elizabeth Lawrence, who took the sugar for more than nine weeks—the results were, an increase of three quarts in the quantity of urine passed in twenty-four hours, the quantity being more than doubled; an increase in the amount of sugar from fifty-six to eighty grains in each fluid ounce; and an increase in her weight of seven pounds. Ann Coleman took the sugar for one month with the following effects: the quantity of

urine passed in twenty-four hours increased from eight to fourteen pints; the urine contained one more grain of sugar in each fluid ounce; and she lost two pounds and a half in weight. Hannah Lawrence, took half a pound of treacle daily for six weeks; and the results were that she lost four pounds in weight, passed during twenty-four hours one pint more urine, and this urine contained an increase of four grains in each fluid ounce. I do not mention the specific gravity as affording evidence of much value in judging of the progress of these cases because it is liable to vary with the solid constituents of the urine, of which, besides the sugar, as is well known, there are several, and these vary with the amount of exercise, quantity of drink taken, &c.

As far as I know, there have been ten cases of glucosuria treated with sugar. The first, that under the care of M. Piorry, referred to previously in this paper, was much improved and passed much less urine, which contained no more sugar than it did before this plan of treatment was commenced. The remaining cases have all been published in the 'British Medical Journal' during the past and the current year. Dr. Budd, of Bristol, was the first in this country to try this agent. He had previously seen an account in the "Gazette Médicale,' of M. Piorry's case. Dr. Budd's patient improved much while taking the sugar, which he did for five months: the quantity of urine voided was very much lessened, and although the quantity of sugar it contained was never exactly determined, its specific gravity fell, and we may, therefore, infer that it did not increase; and the man gained twenty pounds in weight. In two gentlemen under the care of Dr. Williams, of Swansea, the saccharine treatment, which was continued for three days only, made them rapidly worse. In both the quantity of urine passed was doubled, and the specific gravity increased from 1040 to 1056. Similar injurious results were noticed in a female, under the care of Dr. Burd, of the Salop Infirmary. Marked benefit, however, was obtained under this treatment by a patient under the care of Dr. Corfe, of the Middlesex Hospital. This diabetic, having taken sugar for about six weeks, gained eighteen pounds in weight. He passsed three pints and three-quarters of urine in the twenty-four hours, instead of five pints, and the quantity of sugar had decreased from 100,28 to 20 in 1000 parts. A patient under the care of Dr. Brittan, of Bristol, after taking sugar for two weeks, had gained a pound in weight, the daily quantity of urine voided decreased from ten to six quarts, and its specific gravity was four degrees less.

In six of the ten cases the sugar appears to have been injurious, while in the remaining four it seems to have been decidedly beneficial. We may, therefore, say that, under certain conditions, the administration of sugar in glucosuria affords relief. These conditions have not yet been ascertained, but on carefully comparing the published reports of these ten cases, I find that in all those in which benefit accrued, the supply of fluid was limited, whereas in the others the patients appear to have drunk *ad libitum*. In the brief abstract of Dr. Brit-

tan's case published by Dr. Budd, nothing is stated in reference to this point: but as in Dr. Budd's own case it appears that the quantity of liquids allowed was limited, it is extremely probable that his colleague's patient underwent a similar restriction. In the history of Dr. Budd's patient the injurious effects of large quantities of fluid were manifested. He was discharged much relieved: but after a sojourn of three days at his home in the country, during which, writes Dr. Budd, "he took advantage of his freedom from restraint to drink freely. During his absence he never took less than three quarts of cider daily, and once, by his own confession, he was the 'worse for liquor.' It was obvious on his return that he was not nearly so well. His skin had become harsh, his tongue was dry and brown, he was very thirsty, had lost his appetite, and he had grown rapidly weak. The day after his return he passed more than eight pints of urine, of specific gravity 1036; previous to his discharge, the average daily quantity of urine was five pints, of specific gravity ranging from 1031 to 1034. In the week that began with his three days of absence he lost more than five pounds in weight. In the week following his weight fell still further, from 125 to 120 pounds. Put upon his previous treatment, he began to mend at the end of a fortnight."

Dr. Corfe's patient, as I have already stated, received much benefit; yet his progress at first was not promising, apparently owing to his not adhering strictly to his instructions, part of which was regarding the quality and quantity of his drink, which was to consist of a cup of coffee and half an ounce of candy sugar in the morning, a tablespoonful of rum in a glass of water, with the same quantity of sugar candy, and five grains of carbonate of ammonia at luncheon, and two glasses of claret at dinner. In the evening he was desired to take an ounce of honey on bread in lieu of butter, and to sup on boiled milk, with an egg, &c. After having continued the saccharine treatment for thirteen days, the following results were obtained: The urine increased from four to eight pints in twenty-four hours, and the quantity of sugar had increased nearly twelve grains in 1000 parts, and he had lost in weight more than a pound. It should be here remarked that he frankly acknowledged that he had not followed the directions of treatment in so strict a manner as he could have wished for. Although he felt stronger and more lively in mind, he had been to several festive parties, and had eaten freely of potatoes and bread on several occasions, and had drunk beer or bottled stout. But after being reprimanded severely for his indiscretion, he faithfully adhered to the prescribed form of dietary. The results were, as I have previously shown, extremely satisfactory.

You have already heard how much stress that distinguished physician M. Piorry lays upon abstinence from drink, which he evidently considered an important element in the success of his treatment. I think it may fairly be said that, according to the evidence yet adduced, the saccharine treatment of glucosuria is only beneficial when the quantity of fluid given to the patient is limited.

One advantage of this plan is that it suits sometimes when the old method by interdicting the use of amylaceous and saccharine substances fails. This occurred in the cases under the care of Dr. Budd and Dr. Corfe. It has long been known that abstinence from starch and sugar affords relief, as is shown in the case of Elizabeth Lawrence, whose bran biscuits contain no starch; and the only article of food she consumes which contains sugar is the milk, and that she has to-day discontinued. Lawrence, I may state, finds her biscuits by no means disagreeable, and she continues to eat them with the same relish she had for them from the first.

Much has yet to be learned concerning the mode of using sugar in glucosuria; and I would beg with great deference to submit that in future observations it would be advisable not to interfere with the action of this agent by the simultaneous administration of other remedies; and for the reasons mentioned [see the first portion of this article p. 123 to 129,] substances containing glucose, such as honey and fruits, should be given in preference to those containing cane-sugar; and the glucose should be given in moderate quantities at a time and frequently, rather than in large quantities at long intervals.—*Brit. Med. Journal, May* 8 *and* 29, 1858, *pp.* 368, 425.

44.—TREATMENT OF DIABETES MELLITUS.

By Dr. T. Inman, Liverpool.

I have, in my hospital experience, had four cases of diabetes mellitus under my care; two prior to the publication of Dr. Claude Bernard's researches, and the promulgation of Dr. Budd's views; and two since. Of the first two, I will only say that the patients went out of the hospital worse than when they came in, although no attempt was spared to benefit them.

The last two cases came to very different conclusions. I may for the sake of brevity, describe both patients as being labouring men, about forty years of age—ill for many months. The quantity of urine passed was over twenty pints daily, the specific gravity 1045; the presence of sugar was ascertained by fermentation and other tests. Emaciation was considerable; and thirst great. Both had been under dispensary treatment before their admission. In adopting a plan of treatment I was guided by the following considerations:

1. The liver naturally produces sugar in a definite quantity. In diabetes there is an excess of sugar, and we may fairly infer that it comes from the liver. Opium has a decided effect in diminishing the bile producing or secreting function of the liver, and it is reasonable to suppose that it will reduce the sugar-forming function. Experience has long told us that no single remedy in diabetes has been

so efficacious in diminishing the quantity, &c., of urine passed, as opium. Opium, therefore, should be one ingredient in the treatment.

2. Again, Bernard has shown that the liver makes sugar, no matter what is the nature of the food employed. Dr. Budd has shown that some patients, at least, may be benefited by saccharine food. But my patients did not long for sugar; and they did enjoy their ordinary food; consequently I neither restricted them to non-saccharine, or non-amylaceous diet, or prescribed unusual quantities of sugar. They were to have the ordinary full diet of the hospital, but more in quantity if they chose, either of bread, meat, or potatoes.

3. Again, it seems to be clear that in diabetes, there was debility, implicating more or less the whole system; that there was danger of death by consumption; that the digestive powers, notwithstanding their apparent energy, must be impaired; at any rate, that opium was liable to disorder the stomach, and that it could be tolerated in larger quantity if combined with quinine.

The result of these considerations was the following prescription for a pill:

Opium, one grain; quinine, two grains; to be taken every four hours. Full house diet, with porter daily.

The effect of this was soon apparent. The men began to improve rapidly and steadily; the urine diminished until it stood at ten pints only per day, with a specific gravity of 1035. Commensurate with this, their strength and spirits increased, and they gained in flesh considerably. The opium never affected the head except on one occasion, when the patient, hoping to expedite his recovery, took a double dose. The bowels were habitually regular. The plan of treatment was neither varied nor altered during their residence in the hospital. They remained under notice, the one about three months, the other for six weeks. Both left the house of their own accord, as they considered themselves sufficiently cured, and competent to do their ordinary work. I have seen one since he went out, and found that he continued strong, and, as he thought, well.

Of course I do not imagine that these two cases are sufficient to upset our older notions of the correct treatment of diabetes, I merely offer them as a small contribution to our general therapeutical stores.

I may just mention, as a curious fact, that one of my unsuccessful cases found that he received more benefit from a diet of raw beef than any other thing dietetic or medicinal which he had taken; and that every new medicine did him good for about two days.—*British Med. Journal, Sept.* 18, 1858, *p.* 789.

45.—*On Diabetes from Cerebral Disease.*—Since the experiments of Claude Bernard have shown that irritating a limited portion of the cerebral substance is followed in animals by the production of sugar in the urine, the attention of physiologists and pathologists has been drawn to the question of how far some of the cases of diabetes met with in practice may be due to cerebral disease. As a slight contribution to the investigation of the subject. M. Leudet relates four cases, in which he believes this relationship is well made out; and from a consideration of the particulars of these, and of observations made by other practitioners, he comes to the following conclusions:—1. Diabetes arises in certain cases from organic changes in the brain. 2. Its commencement may coincide with that of the disease of the brain, or it may take place subsequently. 3. Cerebral disease attended with convulsive movements are those which are especially accompanied by glucosuria. 4. The diabetes may be temporary, manifesting itself during an exacerbation of the cerebral disease, and disappear with this. 5. The symptoms of glucosuria differ in these cases in nowise from the ordinary disease developed under the influence of other causes. 6. The diabetes does not derive any aggravation from its antecedent. 7. The treatment should be that of ordinary diabetes.—*Gaz. Médicale. —Med. Times and Gazette, July* 10, 1858, *p.* 42.

DISEASES OF THE URINARY ORGANS.

46.—A CASE OF ALBUMINURIA PERMANENTLY CURED BY IRON; WITH REMARKS.

By Dr. Cathcart Lees, Physician to the Meath Hospital; Lecturer on the Practice of Physic, &c.

[The author considers the beneficial effects of iron in the early stages of albuminuria not to be attributed solely to its imparting red corpuscles to the blood, but to its acting rather as a remedy or antidote to the commencing deteriorated condition of the liquor sanguinis, which interferes with the development of the red corpuscles, and thus constituting the very essence of the disease. The following case was lately re-admitted, for another complaint, to the Meath Hospital, after an interval of nine years, when he was treated for albuminuria by iron:]

Patrick Smith, aged 40, a coachman, of temperate habits, was admitted, under my care, into the Meath Hospital (February. 1849), for general dropsy. He had been attacked, the night previously, with convulsions, stated, by a medical man who had seen him, to be of an epileptiform character; but on admission he was gradually recovering from a state of stupor. and could answer questions. His face was remarkably pale and ghastly; his body, and both upper and lower extremities, very anasarcous; skin dry; tongue red; pulse 76, regular;

great difficulty of breathing, with muco-purulent expectoration, and râles over the entire of both lungs. He complained of pain across the loins, and also of frequent sense of vertigo. The urine was passed in natural quantity, feebly acid, of a dark-brown appearance; specific gravity, 1010; highly albuminous with heat and nitric acid; very deficient in urea. The sediment, under the microscope, consisted of blood-discs, renal epithelium, and casts of the tubes, both entire and broken up. He had been taking mercury for the dropsy, and was under its influence when admitted. I learned that he had enjoyed good health until three years ago, when he was treated for disease of the liver, and cured. He remained well up to eight weeks since, when, after exposure to wet, he was attacked with diarrhœa; and, on its subsiding, his feet and legs began to swell. In a few days his body and face became dropsical, with very scanty and high-coloured urine. The heart was acting strongly, but there was no sign of valvular disease. I considered this a case of sub-acute congestive desquamation of the uriniferous tubes, with the secondary head affection, so often met with in the disease; I therefore ordered him to be dry-cupped over the loins, and, as the bowels were confined, to take half a drachm of compound powder of jalap and an eighth of a grain of elaterium. This caused gentle watery evacuations from the bowels. I allowed him sago, with a small quantity of wine; and then, even though he had general bronchitis, I gave him ten grains of the ammonio-tartrate of iron three times a day. This was followed by the happiest results: his breathing improved; he had no return of convulsions, nor vertigo. I then gave him a vapour-bath twice a week, clothed him in flannel, and kept him on the constant use of the iron for three months, with an occasional purge of the compound jalap powder. The anasarca disappeared entirely; the urine became perfectly clear; the specific gravity rose to 1015; and though a trace of albumen could still be detected, and an occasional sediment of epithelium, with one or two casts of the tubes, yet the man, considering himself cured, left the hospital, and was seen by one of our students working as a railway labourer, and apparently enjoying good health.

He was re-admitted on April 19th, 1858 (*i. e.*, nine years after), in a state of great anemia from loss of blood by the rectum, caused by vascular tumours in that part; but he had not any dropsy, and stated that he had continued free from it, and able to perform his daily work, till a short time previous to his admission, when the great bleeding from the rectum forced him to desist. I was naturally anxious to have his urine carefully analysed, though it appeared perfectly normal and was free from any deposit, no epithelium, or even a tube-cast, being visible under the microscope, but its specific gravity was lower than normal, being only 1012. This was kindly performed by Professor Sullivan, who found, to my great satisfaction, that it was quite free from albumen, and otherwise perfectly normal, except being somewhat deficient in urea, which accounted for the low specific gravity.

I considered this case worth recording at the time, as showing the good effects of the treatment by iron in so early a stage of the disease, even though the condition of the urine and the pain in the back indicated congestion of the kidneys, and when, also, the case presented the symptoms and physical signs of acute congestive bronchitis, with profuse muco-purulent expectoration, but I now regard it of especial value, as proving the *permanent* good effect of this medicine in a class of diseases, which are considered by many persons as almost incurable. An important feature in the early history of the case was the fact of convulsions coming on while the patient was under the influence of mercury, which tends to confirm me in the opinion I have long entertained from what I have observed in similar cases, and which I find corroborated by Drs. Bright and Barlow, of Guy's Hospital, in their last report on the subject, in which they state that "mercury is not only an inefficient, but in all probability a dangerous remedy in those cases in which the renal disease was the primary and principal affection." But though I protest against the general use of mercury in this disease, yet we may use it occasionally as a purgative in combination with other medicines, or even as a diuretic if the dropsical effusion be excessive, and we have failed to give relief by other medicines. —*Dublin Hosp. Gazette, July* 1, 1858, *p.* 197.

47.–WHAT IS THE TRUE NATURE OF 'ADDISON'S DISEASE'?

A remarkable Case of Diseased Supra-renal Capsules, with Asthenia.

A poor young man died lately in Guy's Hospital, who was affected with the asthenia or debility to which Dr. Addison has drawn attention in his curious monograph—an affection now pretty generally known in practice as "Addison's Disease." The duskiness or blotching of the skin was peculiarly well marked, for a period extending over two years; and, as is usual at the Borough Hospitals, the case was watched with considerable attention and interest, though opinions of late, have changed towards an impression that it is the parts adjacent to the capsules which suffer in the malady.

Thomas L——, aged 32, admitted under Dr. Addison's care, July 2, in a very debilitated state, was recognised as having been already in the hospital, under the care of Dr. Habershon, in the latter part of 1856, complaining at the latter date, of what was thought to be liver disease by some, but pronounced by Dr. Habershon a case of "Addison's Disease." The poor man, at this time, had a haggard, worn appearance, and said he suffered from faintness on the least exertion. His pulse was only 64, and weak; but the most obvious symptom was the duskiness of the skin, as if apparently from want of circulation.

Dr. Habershon, adopting the rational view of Dr. Copland, that the disease is not so much due to any vital action that the supra-renal

capsules perform in the economy, as to the pressure or injury exerted by enlarged supra-renal capsules on the semilunar ganglia and solar plexus, with both of which the capsules are intimately associated, proposed the use of electricity, which, together with bark and iodide of potassium, afforded considerable relief. We may say we have seen a similar plan of treatment, of much benefit also, in a case at St. Bartholomew's Hospital—viz., bark, and sarsaparilla, and quinine.

"After leaving the hospital at that time he was better, and he was able to follow his employment," according to the clinical register of cases so admirably kept at Guy's; but three weeks before his last admission he took cold and became much worse, and returned to hospital, as already stated, on the 2nd of July of the present year. He stated his strength had been good, but it was evident that he had become accustomed to an unnatural condition, for he would not admit his extreme weakness even then, although he could scarcely stand. The skin was of a dark-brown colour, and of a deeper tinge at the navel, nipples, and scrotum. He had dizziness and failure of vision on attempting to walk, and no appetite. He was labouring, in fact, under what is called at Guy's, by some, as "Asthenia Addisonii."

We believe the term "Melasma" gives a very absurd idea of the disease; and the word "bronzing" Dr. Addison has, over and over again, repudiated, as not occurring in any of his writings on the disease.

Post-mortem Appearance.—The colour of the darker portions of the skin was very deep, something between the tinge of the quadroon, and the greenish brown of some bodies long kept in the dead-house; the axilla, umbilicus, and genital organs, were particularly dark or blotched; the margin of the lips also were dark; the hair darkish; eyes grey; the muscles were red and of good size; the contents of the chest presented nothing abnormal; the brain was healthy; the lungs—with the exception of the apex of the right lung—were healthy; the heart was small, but firm, red, and healthy; the veins full of blood; the mucous membrane of the stomach was very much injected, and the surface covered with tenacious mucus, as if a low form of gastritis existed; intestines healthy; mesenteric and other glands healthy, as were the liver, spleen, and pancreas. Coming to the suprarenal capsules (which, we may say, have in numerous bodies been examined with much care by Dr. Wilks, for Dr. Addison, and to both of whom their ordinary tissue is well known), they were found to be entirely destroyed, by a deposit of an albuminous or cretaceous deposit; there appeared, also, signs of inflammation of their investing capsules as the latter were firmly adherent to the surrounding parts; the right capsule was thus united to the liver and top of the kidney, and the surrounding fat could not be removed in the ordinary way; the right capsule was about the size of the healthy organ, but the left was puckered into a roundish mass about the size of a walnut;

both, in fact, seemed filled with a cretaceous matter, or white amorphous substance like tubercle; the right capsule was softened in its middle, containing a fluid like pus. In rough terms we would say the capsules, as is usual while they are diseased, in this affection, were full of a chalky tuberculous matter that injured the nervous tissues around them. The most suggestive feature in the case, in fact, was the condition of the semilunar ganglion, the nerve branches of which ran quite into the diseased capsules, and were lost in them.

We need only say the pigmentary matter in the skin presented nothing of importance, being found in the *rete mucosum*, where it was probably deposited in a passivemanner; the destruction of the semilunar ganglia preventing its normal assimilation or absorption.—*Dub. Hospital Gazette, Aug.* 1, 1858, *p.* 229.

48.—ON URIC ACID.

By Dr. A. H. Hassall, Physician to the Royal Free Hospital; Author of "Food and its Adulterations," &c.

Uric acid, or, as it is frequently but improperly termed, lithic acid, is one of the normal nitrogenous and excrementitious constituents of the urine.

It was called lithic acid by its discoverer, Scheele, from *lithos*, a stone, he having first detected it as a constituent of urinary calculus, or stone; it received its present name of uric acid from Fourcroy.

The following formula represents its ultimate composition:—C_5 Hl N_2 O_2 plus H O. It occurs in the urine of man, of the carnivora, of the omnivora, but not in that of the herbivora, at least in the free state, although it does so to a small extent, in the combined form, as a urate; it has been met with in this condition in the urine which is acid and contains urea of the unweaned calf of from three to four weeks old. It never occurs in the blood in a free state, but combined with soda or other bases. The first situation in which it is ever encountered in its uncombined state is the lobules of the kidney, and its presence in this state in that situation, as well as in the urine, may be regarded as accidental.

The urine of birds, both carnivorous and granivorous, and of serpents, which, as is well known, is generally discharged with the solid excrements, although in snakes it is often unmixed with the latter, consists almost entirely of urates. The red excrement of butterflies consists entirely of alkaline urates, and the same substances are contained in the excrements and biliary vessels of many larvæ and beetles.

The uric acid which is precipitated in such abundance in certain morbid conditions does not exist even in the urine in a free state,

but is thrown down from its combinations, in the form of urates, with certain bases, usually chiefly soda.

That it is not held dissolved in the urine in the free state is proved by the fact, that, once precipitated, it cannot be redissolved, even when the urine is heated. It is therefore not correct to say, as is generally done, that uric acid is precipitated from the urine as it becomes cold; the precipitation of only a very small quantity of this principle can be accounted for in this way, since the urine is able to dissolve only a very minute quantity of free uric acid.

There are three circumstances which specially contribute to the precipitation of uric acid, whether free or combined—decrease of temperature, increased proportion of urates, and acidity. Of these causes, sometimes one and sometimes another is the more efficient, but usually they all concur in a greater or less degree in causing the deposit.

The free acids of the urine by which the decomposition of the urates is usually effected are the phosphoric and lactic acids.

So little soluble is uric acid in the uncombined state that it takes, according to MM. Robin and Verdeil, 1720 parts of water, at 15°, to dissolve one part of uric acid and 1150 parts of boiling water. The proportion of uric acid in the urine is even much less than 1 part in 1000, the quantity given by Henry and adopted by most authors: in healthy urine the quantity varies from ·03 to 1·0 in 1000 parts, about ·04 or ·05 being the average, including both the free and combined acid.

In round numbers, the average quantity of uric acid daily excreted may be stated to vary from six to ten grains.

These quantities are of course many times exceeded in certain pathological states, the acid being in a state of combination; but if a greater proportion than 1 in 1500 of free acid were present it would become immediately precipitated.

"The conditions," remark MM. Robin and Verdeil, "of the formation of free uric acid are the mixture of an urine, neutral or alkaline, containing urates, and of an urine containing an acid capable of displacing that of the urates. As to the simultaneous formation of two urines in the kidney and the ureters, it has been demonstrated experimentally, in the rabbit, by M. Cl. Bernard, the anatomical conditions being in the main similar in man, and the formation of crystals of uric acid in the kidney, leads one to believe that it is the same even here."

From the small quantity of uric acid normally present, as well as from its occasional absence from the urine of man, the dog, and the cat, MM. Robin and Verdeil regard it as an immediate proximal principle, which is almost entirely pathological: that, in fact, it chiefly forms deposits which are morbid or almost so. Uric acid is certainly

purely excrementitial, its retention in the organism becoming an obstacle to the regular performance of its functions.

Uric acid, although so little soluble in water or urine, as such, readily becomes so when in contact with certain salts: thus phosphate of soda dissolves uric acid indirectly—that is, part of the soda combines with the uric acid, forming a soluble urate. It has been particularly observed by Heintz, that uric acid is dissolved in notable quantity when cast into boiling urine, deprived by filtration of all alkaline urates. As it cools, the urine deposits an amorphous powder, which is not uric acid but an alkaline urate. Operating upon the same urine this amorphous urate may be obtained three times successively. Thus the uric acid, on becoming dissolved, ceases to be uric acid, but becomes an urate, probably of soda, and the phosphates, deprived of part of their base, have passed into the state of acid salts. It is not, therefore, correct to say that uric acid is dissolved by the phosphates or other salts with alkaline bases; it merely becomes so by the combinations which it forms.

Sources of the Production of Uric Acid.—The nitrogen, which enters so largely into the composition of uric acid, indicates to some extent the sources from which it proceeds.

One of its chief sources is in the disintegration of the *nitrogenous tissues* of the body. According to Dr. Prout, it results from the disintegration of the *albuminous* tissues only. Liebig, on the other hand, considers that it is the immediate product of the conversion of all nitrogenous tissues, and that *urea is a secondary product, arising from the action of oxygen and water upon the uric acid.*

Another source is the mal-assimilation of nitrogenous articles of food.

Again, there is reason to believe that excess of uric acid is sometimes formed where more nitrogenous food is consumed than is required to supply the waste of tissue.

Lastly, where the functions of the skin are impaired, so that the escape of the usual nitrogenous excretion is impeded, an increased amount of uric acid makes its appearance in the urine.

The composition of uric acid also furnishes a clue to the pathological conditions in which this product is either in excess in the urine or is deficient.

Conditions in which Uric Acid exists in the Urine.—It has been stated that uric acid occurs in the urine in one of two states, either free or combined, and by far the most frequently it is present chiefly in the latter state—that is, united with bases, and forming urine.

Until recently, the opinion was entertained by even the highest chemical and practical authorities on the urine, that the base with which the uric acid was combined was almost invariably *ammonia*. Amongst those who held this opinion in this country may be mentioned Prout, Bence Jones, and Bird.

Prout thought that two lithates of ammonia existed normally in the urine: one of them termed the acid lithate of ammonia, attributing the acidity of the urine to it.

Dr. Jones thus expresses himself in regard to the state in which the uric acid exists in the urine.

"In the twenty-seventh volume of the 'Medico-Chirurgical Transactions' there is a paper on the state in which the uric acid exists in the urine. The conclusions at which I arrived were that the uric acid is combined with *ammonia*; but that the urate of ammonia is modified in form and in solubility by the presence of common salt, and by other saline substances which exist in it."

At p. 83 of the fourth edition of Bird's 'Urinary Deposits,' we meet with these remarks:—

"The deposits most frequently occurring in the urine on cooling, by evaporation in vacuo, or exposure to a freezing mixture, are, however, neither crystalline nor composed of uric acid alone. They consist of urate of ammonia, sometimes mixed with urate of soda or lime, more or less contaminated with colouring matter.

The views entertained by Lehmann respecting the composition of the urates are much more correct. He distinctly asserts that what is usually described as urate of ammonia, is indeed urate of soda; and in his "Chemistry" we find the following observations in relation to this point:—

"The sediment which is deposited from acid urine in fever, and in almost all diseases accompanied with fever, has long been misunderstood in reference to its chemical composition. Originally it was regarded as a precipitate of amorphous acid, and subsequently (and almost to the present time) it was regarded as urate of ammonia. It has, however, been fully demonstrated, both by myself and Heintz, that this sediment consists of urate of soda, mixed with very small quantities of urate of lime and urate of magnesia.

"It would be both superfluous and wearisome to recapitulate the arguments adduced by Becquerel, myself, and Heintz, against the opinion of Bird, who maintains that this sediment is always urate of ammonia, as the actual nature of the deposit has been so completely established. I will here only remark that, as I long ago found, and as Liebig has since confirmed, scarcely any ammonia occurs in urine; and that, according to the direct analysis of the sediment made by Heintz, scarcely 1% of ammonia could be found in it."

Further on (p. 216), Lehmann proceeds to observe—"Even in alkaline urine it is very seldom that urate of ammonia occurs as a sediment; in those cases it is found in white opaque granules, which, as it has been already stated, when seen under the microscope, appear as dark globules, studded with a few acicular crystals. It scarcely ever occurs except in urine which, by long exposure to the air, has undergone the alkaline fermentation. Even in the alkaline urine of patients with paralysis of the bladder dependent upon spinal

disease, it is very rarely that I have found these clusters of the urate of ammonia; and in the alkaline urine which is sometimes passed in other conditions of the system, it is never found."

The error pointed out regarding the composition of the urates pervades all the writings and reasonings of Prout, Bird, and Bence Jones. I first exposed it in my review of the fourth edition of Bird's "Urinary Deposits," published in the 'British and Foreign Medico-Chirurgical Review' for July, 1853.

I then published the results of the quantitative analyses of five samples of urates. These analyses were made chiefly by Dr. Letheby, from specimens forwarded to him by myself, he being professionally employed for the purpose.

Neutral Urate of Soda.—This urate is very frequently encountered in the urine. It occurs normally in the urine of the carnivora, in calculi, and in the pulverulent deposits of the urine, also in the peri-articular concretions of the gouty. It likewise occurs in great abundance in the urine of persons subjected to treatment with alkaline waters containing soda. It is this salt which is so abundant in the blood of those labouring under attacks of gout.

MM. Robin and Verdeil state, on the authority of Heintz, that the deposit which occurs in fevers and in maladies accompanied by inflammatory fever is formed almost entirely of urate of soda and a little urate of lime, with traces of urate of ammonia.

The neutral urate of soda occurs usually in the urine in a granular or pulverulent state, but sometimes also in the form of minute and compact spherules, mostly single, but sometimes neutral; united, each spherule being formed of numerous needle-like crystals, which, however, can only be occasionally detected by reason of the compactness of the spherules.

We find in Bird's "Urinary Deposits" the following remarks in regard to this salt. After treating of urate of ammonia, he observes:—

"Of the other salts of uric acid, the urate of soda is the only one I have satisfactorily recognised forming a distinct deposit. It occurs occasionally in gout, but I have more generally met with it in the urine of persons labouring under fever, who were treated with carbonate of soda. It then occurs in round yellowish or white opaque masses, provided with projecting, generally curved, processes, forming a very remarkable figure. Varieties of this more confusedly crystalline are less infrequent."

In the herbivora, the presence of urate of soda is either only temporary, or it occurs incidentally. Thus it disappears when the urine becomes alkaline, as at the period of weaning, and when the animal is nourished upon vegetables.

There is no known process by which the neutral urate of soda can be separated and isolated from the other urates. To establish its presence in any urate, this must be separated from the urine, well washed,

and the quantities of acid and of the bases determined in the manner ordinarily practised by chemists.

Urate of soda always exists in the blood, its quantity being greatly augmented in gout, especially during the paroxysm. It may be detected in the blood by the following process:—The serum must be dried, treated with alcohol, the residue drenched with four or five portions of water successively; the aqueous infusions are then to be evaporated to the consistence of an extract. A portion of this extract treated with nitric acid, and exposed to the vapour of ammonia, gives the characteristic red tint of murexide; the remainder of the extract treated with hydrochloric acid furnishes crystals of uric acid. From the serum of the blood treated in the same manner, but not acidulated, crystals of urate of soda become deposited in great quantity.

[The biurates of potass, ammonia, lime, and magnesia are also found in urinary deposits, the last three very commonly.]

Characters of Urine depositing free Uric Acid.—Urines depositing uric acid are usually somewhat high-coloured, possessing a deeper amber tint than natural, and being sometimes of a reddish-brown colour; they are of considerable specific gravity, are always acid, and frequently contain such an excess of urea that, on the addition of nitric acid to a little of the urine in a watch-glass, crystallization obvious to the naked eye ensues, resulting from the formation of nitrate of urea.

The first situation in which uric acid may be deposited from the urine is in the lobules of the kidney. The crystals may be washed away from this situation by the urine; or, as frequently happens in cholera, they may be formed in the renal tubules in connexion with the escape of albumen, and be thrown off impacted in the albuminous casts; or, lastly, the uric acid crystals may accumulate in the lobules to such an extent as to form *renal* calculi.

The second situation in which uric acid may be deposited is in the bladder. After its precipitation in this viscus, it may be voided either wholly or in part as a sand-like deposit. When not wholly discharged, it is apt to accumulate in the bladder, giving rise to *vesical* calculi. The calculus may be either single, or a number of small calculi may be formed, and these may, and frequently do, escape by the urethra from time to time.

Lastly, and this is by far the most common occurrence, the uric acid is deposited from the urine after this has been voided, and as it becomes cold.

The uric acid, even when in excess in any urine, does not become deposited immediately, but as many as twenty-four, and even forty-eight hours are required for its precipitation. This is also the case when hydrochloric acid has been added to the urine for the purpose of aiding its deposition. It has been observed that a considerable time is required for the subsidence of the acid where the urine is alkaline, and in cases of gout.

Neither does the urine deposit spontaneously the whole of the uric acid contained in it. This is shown by the fact that, after the removal of the natural deposit, and subsequent addition of a few drops of hydrochloric or nitric acid, a further quantity of uric acid crystals is thrown down. Decomposition has the same effect in causing the precipitation of the uric acid as the addition of an acid.

The principal circumstances to the operation of which the precipitation of uric acid is to be attributed, have already been noticed.

Microscopical Characters of Free Uric Acid.—Free uric acid occurs in the urine chiefly as a deposit, and is always in the state of crystals; these crystals form a sand-like sediment, more or less fine or coarse, and more or less coloured; in general, the higher the colour of the urine, the deeper that of the crystals.

Uric acid crystals vary greatly; they may be pale-fawn, yellow, deep amber, orange, red, and even of a reddish-brown or black colour, like burnt sienna. This last colour is observed particularly when the uric acid has been precipitated artificially by means of hydrochloric or nitric acid. According to their colour are deposits of uric acid likened to either *yellow* or *red* sand.

The circumstances which modify the form and arrangement of the crystals of uric acid are the quantity of acid present in the urine, the temperature, acidity, and alkalinity, the specific gravity, and the composition of the urine. The exact effects of these several modifying causes and conditions have not as yet been fully and accurately determined.

It has been stated that the precipitation of uric acid and the urates is determined by the three following causes, acting either separately or conjointly; namely, increased proportion of uric acid and urates to the urine, increased acidity of the urine, and diminished temperature.

It should be remembered, however, that the mere precipitation of uric acid or urates is no proof of the excess of these in the urine; as the precipitate may be due solely to increased acidity. Again, there may be an excess of urates, yet no precipitate, owing to the absence of acidity, or even to the alkalescence of the urine. When urates are deposited and not uric acid, the acidity of the urine is usually not considerable.

It is very probable that a knowledge of the several circumstances which modify the form, size, and arrangement of the crystals of uric acid might lead to some useful practical results, and might possibly serve to indicate particular pathological conditions of the urine.

It is, however, certain that many of the modifications of uric acid crystals, as well as those of many other salts, are determined by very slight and trivial causes. This is shown by the fact that several different forms of the crystals of the same substance or salt may frequently be obtained by the evaporation of a single drop of the solution containing it on a slip of glass. Again, Dr. Smidt has shown that

variations in the rapidity and manner of the precipitation of the uric acid greatly modify the result. Thus, by the precipitation of uric acid from solutions of urate of potass by means of acetic acid, more or less rapidly, the solutions being more or less heated, crystals of uric acid may be obtained, some of which are oval, some diamond shaped, some hexagonal, others in rectangular columns and tables, and others in rhombic prisms.

Characters of Urine depositing Urates.—The variations in the colour of the urates deposited correspond with certain descriptions of urine.

The urine depositing the nearly *white* urates is pale and of low specific gravity about 1010 to 1014. Moreover, these urates do not readily subside, but remain suspended like clouds in the fluid, presenting in some cases, as remarked by Golding Bird, the appearance of muco-pus, for which indeed not unfrequently they have been mistaken.

The urine depositing the *fawn*-coloured urates is usually of an amber colour and of higher specific gravity, namely, about 1018. This deposit is a frequent attendant upon colds, in which the action of he skin has been impeded.

The urine from which the red, lateritious, or *brick-dust* sediment is thrown down, is of a still deeper colour and higher specific gravity.

Lastly, the urine from which the brilliant purple and bright pink sediments are precipitated is always highly coloured and of high specific gravity, it being often of a deep purple verging on crimson, and conveying the impression of blood being present.

These purple deposits occur especially where great obstruction exists to the elimination of carbon from the system, as in organic diseases of the liver and spleen, and where extensive suppuration is going on.

As is the case with uric acid, the quantity of urate spontaneously deposited from any urine, does not always indicate the whole amount of urate contained in that urine. If the urine be decidedly acid, an abundant deposit of urate will occur, even when the quantity present is not considerable; but if the urine be but little acid or alkaline, then much of the urate will be held dissolved.

Chemical Characteristics of Uric Acid and the Urates.—Of Uric Acid.—Heated in the urine, uric acid deposits do not dissolve, but usually become more clear from the solution of the urates with which they are frequently more or less mixed. It readily burns, evolving an odour resembling bitter almonds, and leaving a small quantity of a white ash, consisting generally of phosphate of soda or lime, or both. It is soluble with the aid of heat in solution of potash, a urate of potash being formed; it also dissolves readily in the alkaline carbonates, borates, phosphates, lactates, and acetates, abstracting some of the alkali from these salts. It is precipitated from its solution in the urine, whether it be free or combined, by hydrochloric, acetic, and most

other acids. It readily dissolves in nitric acid, furnishing a delicate and characteristic test. When a drop or two of strong nitric acid are added to uric acid in a state of powder, it slowly dissolves with effervescence, carbonic acid gas and nitrogen being evolved, and a mixture of alloxan, alloxantine, and some other compounds, being left behind. On the evaporation of the acid to dryness, and the application of a gentle heat, a red residue is left, which, when cold and moistened with a drop or two of ammonia, or exposed to its fumes, developes a beautiful purple colour. This pigment is the purpurate of ammonia of Prout, and the *murexide* of Liebig.

Submitted to dry distillation, uric acid is converted into *urea*, cyanic acid, cyanide, hydrocyanic acid, and a little carbonate of ammonia, a brownish-black substance, rich in nitrogen, being left.

On boiling uric acid with twenty parts of water, and adding peroxide of lead as long as the brown colour of the oxide continues to disappear, there are formed *oxalate* of lead, *urea*, and *allantoine*. Treated with dilute nitric acid, it dissolves with considerable readiness, developing equal parts of nitrogen and carbonic acid, and giving rise to the formation of several compounds.

The decomposition of uric acid by reagents gives rise to the formation of a great variety of organic substances of great interest, but of which we shall only notice the more important. We have already referred to some of the circumstances under which urea, oxalic acid, and allantoine occur as products of the decomposition of uric acid; other products are *alloxan*, *oxaluric acid*, which may be regarded as a combination of two atoms of oxalic acid with one atom of urea, *alloxantine*, and *murexide*.

It appears from the recent experiments of Wohler and Frerichs that the introduction of uric acid into the stomach or the veins is followed by an increase in the amount of urea and oxalate of lime in the urine; this result affords tolerably strong evidence that the uric acid undergoes, in many cases, in the organism, a decomposition into urea and oxalic acid similar to that artificially produced by peroxide of lead.

Of the Urates.—The urates are distinguished from all other urinary deposits by becoming dissolved on the urine containing them being heated, and by their being again deposited as this becomes cold; the deep-coloured urates require a somewhat lighter temperature for their solution than the paler varieties; liquor potassæ or ammonia immediately dissolves these deposits, while acetate and hydrochloric acid cause the separation of the uric acid, which becomes visible under the microscope in the form of crystals.

The Pathology of Uric Acid.—The principal sources of the production of uric acid are, first, the disintegration or waste of the nitrogenized tissues of the body; and second, the nitrogenous constituents of the food consumed. These facts furnish us with the key to the pathology of uric acid.

This principle may either be in excess in the blood or urine, or it may be deficient.

It is in excess—

1st. Where there is abnormal waste of the nitrogenized tissues.

This occurs under excessive bodily exercise, or wear and tear, in all diseases of a sthenic character, as in acute inflammations, active fevers, in acute rheumatism, in phthisis, and in most organic and even in some functional affections of organs which materially influence the circulation, as the heart and liver.

The remarks of Lehmann, respecting the increase of the urates from disturbed circulation, are of much interest:—

"We especially observe the formation of such sediments when, for any reason, the due interchange of the gases in the lungs does not take place, or when, from disturbance of the circulation, the blood does not really permeate the pulmonary vessels. Thus a sediment of this nature may be noticed in men and animals when there is an insufficiency of proper exercise. Carnivorous animals, which in their natural state secrete so little uric acid after long confinement, frequently pass a sedimentary urine, especially when they have been reared in cages, and have been attacked with osteo-malacia. In fully-developed emphysema, or even when only a part of the lung has lost some of its elasticity, a sedimentary urine is one of the most common symptoms. Heart disease, enlargement of the liver, &c., are associated with disturbance of the circulation, and hence give rise to sedimentary urine. Large masses of secreted urate of soda are found in no disease except in true granular liver, which obviously can never exist without considerable disturbance of the circulation. In fever also, the due relation between respiration and circulation is no longer maintained, and hence there is an augmentation of the uric acid in the urine; for none but mere chemists could be led to the erroneous idea that in fever too much oxygen is conveyed to the blood—in short, that fever is attended with too rapid a process of oxidation."

With regard to the reason of the increase, Lehmann makes these observations: "Now if the urea," as is very probable, "be produced from the uric acid by the partial oxydation of the latter, anything impeding this process must cause less urea and more uric acid to be separated by the kidneys, and hence we see why the amount of uric acid in the urine must be increased in fevers, and other disturbances in the circulation and respiration. We have seen that in like states, oxalate of lime and lactic acid increase, for a precisely similar reason; and without wishing to introduce rude chemical views into the science of general life, nothing seems more simple, and more in accordance with nature than this explanation of the origin and augmentation of uric acid. We regard uric acid as a substance which stands one degree higher in the scale of the descending metamorphosis of matter than urea.

The influence of active disease in increasing the amount of uric acid in the urine has been most conclusively demonstrated by the researches of MM. Becquerel and L'Heretier. From the average of eleven cases of acute inflammatory diseases observed by M. Becquerel, and twelve of continued fever on the fifteenth day by M. L'Heretier, it appeared that the quantity of uric acid excreted was more than double the average of that of healthy urine :—

	Acute inflammation.	Fever.	Health.
Specific gravity of urine	1·0216	1·0229	1·017
Uric acid	1·041	1·312	0·391

There is excess—

2nd. Where a greater quantity of nitrogenous food is consumed than is required to make up the waste of tissue.

This excess is met with in cases of over-indulgence in animal food, or where the quantity of food partaken of not being greatly in excess too little bodily exercise is taken, and consequently there is diminished waste of the nitrogenized tissues. The effect of *food* in influencing the amount of uric acid excreted has been shown by Lehmann and Bence Jones.

While living on a mixed diet, Lehmann. discharged on an average 1·1 gramme of uric acid in twenty-four hours ; while during a strictly animal and a strictly vegetable diet the respective amounts were 1·4 1·0 grammes.

Jones has proved that a few hours after food, whether vegetable or animal, the amount of uric acid is increased ; but that long after all food it is greatly diminished. This is shown in the following table :—

	1000 grs. of uric acid.	Urine. sp. grav.
After animal food, highest amount	1·022 grs.	1027·8
After vegetable food „	1·010 „	1025·6
Before animal food, lowest amount	0·049 „	1024·8
Before vegetable food „	0·049 „	1024·0

From these results it is obvious that the nature of the food exerts far less influence on the amount of the uric acid formed than on that of the urea.

It is in excess—

3rd. Where there is defective or mal-assimilation of the food, as in many forms of dyspepsia.

The effect of disturbed and imperfect digestion is particularly well shown by Lehmann.

"Thus," he states, "I have observed, both in myself and in several other persons, that if indigestible food or spirituous liquors, not sufficiently spiced, be taken before bedtime, the morning urine always deposited a considerable sediment. While in the normal state, the

ratio of the uric acid to the urea = 1 : 28 to 30. I found that in urine passed after indigestion, the ratio = 1 : 23 to 26; and that the ratio of the uric acid to the other solid constituents, which is ordinarily about = 1 : 60; was now = 1 : 4 + 1 to 52, so that the amount of uric acid is here not only increased at the expense of the urea, but also at that of the other solid constituents of the urine. In the most marked case I found in 100 parts of solid residue 2·4 of uric acid, 35·2 of urea, and 62·4 of other solid constituents: hence the latter were absolutely increased in the urine.

The excess of uric acid first formed in the blood, and afterwards eliminated by the kidneys in acute *rheumatism* and *gout*, has probably a double origin; on the one part in excessive waste of the tissues, and on the other, and chiefly, in mal-assimilation of the nitrogenous constituents of the food.

In the blood, this excess of uric acid exists in combination usually with soda, and being scarcely held in solution by the serum of the blood, and not finding its escape readily enough by the kidneys, it, exuding from the bloodvessels, becomes deposited around the joints of the extremities.

Dr. Garrod has found that there is a constant and well-marked diminution of the uric acid in the urine before the paroxysm in acute gout, and always in chronic gout; while, on the other hand, in rheumatism, especially in acute articular rheumatism, the amount of uric acid in the urine is very much increased.

There is excess—

4th. Where the excretory function of the skin is impaired: as from checked perspiration arising from cold and from different forms of skin affections.

It has been ascertained by various experiments, that a large amount of nitrogenous substances are daily thrown off by the skin in health. Seguin showed that thirty-three ounces of solid matter on an average were eliminated in the twenty-four hours, a quantity nearly equal to that of the urine. Anselmino ascertained that the cutaneous exhalation thrown off in the twenty-four hours contained 107·47 grains of organic matter, and 81·92 grains of saline matter, the rest being volatile matter and water.

The composition of the cutaneous organic matter has not been accurately determined. According to Landerer, urea forms one of its constituents, while Berzelius states that it contains osmazone. Very probably, also, uric acid is not an unfrequent constituent. The functions of the skin being impaired, the urine forms the chief outlet by which this large amount of organic matter becomes excreted; some portions of it in the forms of urea and possibly uric acid.

"Fourcroy found that the urine contains more uric acid in winter than in summer. Marcet formed the conclusion that the uric acid diminishes in the urine after severe perspiration. Schultens found that, in Holland, where, in consequence of the great humidity of the

atmosphere, the cutaneous transpiration is diminished, the amount of uric acid varied from 0·21 to 0·67%. For a similar reason, in tropical countries lithiasis is almost unknown." (Lehmann.)

On the Treatment of Uric Acid Deposits.—The physician is more frequently called upon to treat affections connected with the presence of excess of uric acid in the urine than any other urinary deposit, and this for several reasons; one of these is, that deposits of uric acid, either free or combined, are readily recognised, even by the patient himself; and a second reason is, that they frequently give rise, mechanically, to considerable irritation and pain in the kidneys, ureters, bladder, and urethra, causing the patient to seek for immediate relief.

The treatment admits of division into two kinds, the curative and the palliative: too frequently the treatment adopted is of the latter character only.

For the curative treatment it is necessary that we should ascertain the cause or source of the excess of uric acid.

It has already been shown that this may be in too rapid disintegration of tissue, in excess of animal food, in its mal-assimilation, and in defective cutaneous excretion.

The palliative treatment has for its object the solution of the uric acid deposit, whether this be in the kidney or the bladder, the distressing mechanical effects being thereby obviated.

Sometimes the only treatment required is the palliative, the excess of uric acid being due to temporary causes only, and treatment being needed solely on account of the irritation produced by the deposit.

Sometimes treatment is required for uric acid deposit even where there is no excess of it in the urine, the precipitate formed being due not to excess, but to over acidity of the urine.

Again, there may be excess of uric acid in the blood, producing constitutional derangement, with a deficiency of the acid in the urine, as in gout in some stages, and in structural diseases of the kidneys.

If the excess of uric acid be due to over waste of tissue, this must be moderated. The waste may arise, as already described, in various ways, from over exertion of the body, from inflammatory disorders, active fevers, disorders of the heart and liver, &c. In such cases we must lessen undue action, and regulate the circulation and secretions. When the liver is at fault, special attention must be paid to that organ.

If the excess of uric acid be due to over-indulgence in animal food, the obvious indication is to reduce the amount of this within proper limits.

If the excess be attributed to mal-assimilation, the quality and quantity of the diet must be regulated carefully, and the digestive organs improved and strengthened by alteratives and tonics.

Lastly, if the excess be traceable to defective cutaneous elimination,

the first indication to be fulfilled is to restore the skin to a more perfect performance of its function.

In general, however, it is not advisable to confine our attention too exclusively to the cause of the excess; in our treatment of these affections generally we must have regard at once to the diet, the state of the digestive organs, of the skin, &c.

Attention to diet is most important. This comprises the regulation of the quality and quantity of the ingesta: too much nitrogenous food must be avoided, together with all such articles as tend to the production of too much acidity.

For the improvement of the digestive organs, not only must the diet be regulated, but alteratives and tonics administered. The administration of these have for their object the improvement of the primary assimilation of the food, whereby the entrance into the blood of crude nitrogenized and acid materials is prevented. The acids, the lactic and acetic, the products of unhealthy digestion, being absorbed into the circulation and conveyed to the kidneys, act as precipitants of uric acid.

When the liver is at fault, small doses of mercury must be administered; and if the digestion is weak, vegetable bitters should be given, such as cinchona. gentian, columba, and serpentary; the latter remedy is in some cases to be preferred, on account of its action on the skin. When gastrodynia exists, benefit will frequently be derived from the use of the trisnitrate of bismuth, oxide of silver, combined with hyoscyamus or hydrocyanic acid. The gastric symptoms being relieved, a very marked improvement frequently takes place in the character of the urine.

Some of the milder preparations of iron, as the ammonio-citrate or the citrate of quinine and iron will be found of great service, especially when, connected with mal-assimilation, an anemic or chlorotic state exists. From three to five grains of either of the above-named preparations may be taken twice or thrice daily in a wine glass of water or beer, either with or directly after food. Taken with the food, these preparations are more readily absorbed, and agree better.

When there is reason to suspect that the deposit is kept up by a gouty or rheumatic tendency, *colchicum* will often be found to lessen in a very obvious manner the amount of uric acid deposited. The colchicum may be administered in combination with some of the solvent remedies presently to be described, and a little vegetable infusion, or the acetous extract of colchicum may be used, combined or not, as may be necessary, with small doses of blue pili.

Scarcely less important than careful regulation of the diet is attention to *air*, *exercise*, and particularly to the action of the skin.

Air and exercise tend greatly to the improvement of all the bodily functions, and especially promote the healthy performance of digestion. Moderate exercise, by increasing the waste of the tissues, likewise calls the digestive organs into greater activity.

The action of the *skin* is promoted by warm clothing, by bathing, cold and warm, by friction, and sometimes by diaphoretics. In some cases persistence in the use of cold bathing and friction of the skin by horse-hair gloves will be sufficient; in others the warm, or better still, the vapour-bath, may be required, and in others James's or Dover's powders. It has already been noticed that serpentary exerts a diaphoretic action on the skin; benzoic acid, about which we shall have to speak presently, is also diaphoretic.

A great variety of solvent remedies are employed in the treatment of uric acid deposits; the chief of these are the *alkalies;* but *water*, especially soft and distilled water, is a solvent, and the diuretics, by increasing the quantity of water in the urine, likewise act indirectly as solvents.

It should be clearly understood that alkaline remedies, though commonly described as solvents, are so only indirectly—that is, their bases combine with the uric acid, compounds resulting, which are much more soluble than the uncombined acid.

The chief alkaline remedies resorted to are liquor potassæ, carbonate of potash, carbonate of soda, the salts of the vegetable acids, as the acetate, citrate and tartrate of potash, borates of potash and soda, phosphates of soda and ammonia,

Liquor Potassæ.—The liquor potassæ of the Pharmacopœia contains only about one grain of potash in about ten minims of the solution: hence, when this remedy is administered, it should not be given in less than one scruple or half-drachm doses, three times a-day. It may be given in some bland vehicle, or in a mixture in combination with other remedies. Brandish's alkaline solution is much stronger than the ordinary solution, and hence its greater efficacy. The flavour of solution of potash is caustic and disagreeable, and the remedy is probably not so efficacious as the carbonates of potash and soda.

Carbonate of Potash.—The dose of this remedy which should be given is from one scruple to half a drachm, thrice daily. To render it more agreeable, it may be given in combination with about half its weight of citric acid: this causes slight effervescence. The administration of alkaline remedies should be accompanied by the free use of diluents, of which the best is pure water—if *distilled*, so much the better.

[A remedy which has acquired some celebrity in the treatment of the uric acid diathesis is Vichy water, the chief constituent of which is carbonate of soda. A small tumblerful should be taken two or three times a-day. Artificial Vichy water may be made containing 35·5 grains of bicarbonate to a pint; this, with a little dry sherry, forms an agreeable after-dinner beverage for persons whose urine contains an excess of uric acid. The acetate, citrate, and bitartrate of potash are also very useful.]

Borates of Soda and Potash.—The biborate of soda is a very active solvent for uric acid, more so than the alkaline carbonates; and hence it has been advantageously employed in some cases of uric acid gravel. Its administration to women is not advisable, since it exerts a stimulant action on the uterus; and Dr. Bird met with two cases in which it produced abortion.

Borate of potash is a still more active solvent for uric acid than biborate of soda. It should be largely diluted; indeed this remark applies to all the alkalies.

The following prescription for uric acid gravel is by M. Bouchardat:

℞. Potassæ bitartratis, ℥i., grs. xv.; potassæ boratis, potassæ bicarbon, aa, grs. xv. M. Fiat pulvis.

Phosphates of Soda and Ammonia.—These salts are also excellent solvents for uric acid. Golding Bird states that he has administered *phosphate of soda* in several chronic cases of uric acid gravel with the effect of rapidly causing a disappearance of the deposit.

The *phosphate of ammonia* has been particularly recommended by Dr. Buckler, of Baltimore, even in cases in which the uric acid is deposited as a calculus, or around the joints, combined with soda, as in gout. I notice at page 176 of the fifth edition of Bird's "Urinary Deposits," the following remarks respecting this salt:—"I have given it a fair trial in hospital practice, and have no hesitation in saying that it has always succeeded in keeping uric acid in solution in the urine, and in this respect it has appeared equal, if not superior, to borax and phosphate of soda; but I certainly have never seen it diminish the tophaceous deposits in chronic gout. In more recent effusion into the joints of sub-acute forms of rheumatic gout, it has certainly been of service."

The dose of phosphate of soda is from one scruple to half a drachm, and of phosphate of ammonia about ten or fifteen grains, much diluted.

We have now completed the description of the chief solvent remedies employed in the treatment of uric acid deposits. It will be perceived that the number of these remedies is very great, and that the effect of many of them is considerable. *We must never, however, lose sight of the fact, that these remedies do not go to the root of the mischief, but are merely palliative.* In all cases it behoves us to search out the cause of the excess of uric acid, and it is to this that the more important part of our treatment must be directed.

Benzoic and Cinnamic Acids.—Another remedy resorted to in cases of uric acid deposits is benzoic acid. Its chemical action is very peculiar: while the salts already described act upon the uric acid *after* it has been formed, these prevent its formation. Benzoic acid, itself destitute of nitrogen, combines with nitrogen derived from some nitrogenous substance contained in the blood, and which would otherwise go to form urea and uric acid, and is itself converted into hippuric acid, a substance rich in nitrogen.

It has been stated that under the use of benzoic acid uric acid

sometimes altogether disappears. This is questionable. It has been shown by Dr. Garrod that the hippuric acid is formed at the exe nse of the urea, but probably not entirely, as it is very certain that uric acid is also in some cases greatly diminished.

The body with which benzoic acid combines is probably sugar of gelatine or glycocoll, one atom of each of these forming one atom of hippuric acid. *Cinnamic acid* undergoes a similar change to benzoic acid, and is likewise converted into hippuric acid. *Benzoate of ammonia* has been particularly recommended as an efficient remedy by Dr. Holland. Benzoic acid possesses the additional advantage over many other remedies of exciting diaphoresis, thus fulfilling an important indication in the treatment of uric acid deposits. The dose of benzoic acid is about ten grains taken in syrup three times a day.

We are sometimes called upon to treat deposits of urates apart from those of uric acid. The nature of the curative treatment required of course depends upon the cause of the deposit, according as this is connected with inflammation, fever, cold, over-indulgence, mal-assimilation, gout, &c.

It may be stated generally that the urine containing urates is less acid than that depositing uric acid, and that the urates are much more readily dissolved than uric acid; hence the solvent and antacid remedies are not so much required in these cases, and it will generally be sufficient that the quantity of urine be increased, as by diluents and small doses of diuretics, such as the nitrate and acetate of potash. —*Lancet, May* 29, *June* 5 *and* 12, 1858, *pp.* 523, 549, 573.

SURGERY.

AFFECTIONS OF THE BONES AND JOINTS, AMPUTATIONS, &c.

49.—ON AMPUTATION BY A LONG AND SHORT RECTANGULAR FLAP.

By Thomas P. Teale, Esq., F.L.S., F.R.C.S., Surgeon to the Leeds General Infirmary.

[The excellence of a stump is not to be judged of by its seemly form and its being not offensive to the sight; we ought to enquire whether it is well adapted to locomotion, by being able to bear a considerable portion of the weight of the body on its end. Now as a general rule, it may be stated, that stumps are not able to bear even the slightest pressure on their extremities where amputation has been performed by the circular or ordinary double-flap transfixion methods. Mr. Heather Bigg and Mr. Grossmith, of London, and Mr. Thomas Eagland, of Leeds, surgical mechanicians, who have had extensive experience in the adaptation of artificial limbs, state that pressure can never be borne upon the end of the stump formed by the circular or transfixion methods, on account of the pain produced; and that, as a general rule, the cicatrix is found adherent to the end of the bone.]

My own observation of such stumps, taken in conjunction with that of the gentlemen whose statements have been quoted, lead me to conclude: first, that in stumps formed after the circular and transfixion methods it is extremely rare to find a soft moveable mass of tissues over the end of the bone; secondly, that with very few exceptions the cicatrix is adherent to the end of the bone; and thirdly, that such stumps are generally unable to bear pressure on their extremity.

I have certainly known a few exceptions to these statements, and have also seen some apparent but not real exceptions in amputations for accident, in which, on account of the irregular destruction of soft parts, the flaps were formed irregularly, being freely taken from those parts where they could be obtained. But these cases must be distinguished from circular and transfixion amputations, performed "according to rule."

On these grounds, then, I think it may fairly be asserted that stumps formed by the circular and transfixion amputations are far from being perfect.

[From an analysis of 640 amputations of the thigh and leg, for accident and disease, performed in the London and provincial hospitals, it is shown that there is a fatality of nearly one case in three.]

To procure a more useful stump, and in the hope of somewhat diminishing the mortality of the operation, it is proposed to amputate by a long and a short rectangular flap—the long flap, folding over the end of the bone, being formed of parts generally devoid of large blood-vessels and nerves, whilst these important structures are contained in the short flap.

The size of the long flap is determined by the circumference of the limb at the place of amputation, its length and its breadth being each equal to half the circumference. The long flap is therefore a perfect square, and is long enough to fall easily over the end of the bone. In selecting the structures for its formation, such parts must be taken as do not contain the larger blood-vessels and nerves. A flap so formed will be for the most part anterior in position as far as regards the general aspect of the body, but superior when the patient is in the recumbent posture, as during the after-treatment.

The short flap, containing the chief vessels and nerves, is in length one-fourth of the other.

[Mr. Teale strongly recommends the surgeon on first practising this operation to mark out the lines of intended incision in ink, lest the long flap should be made too small.]

The flaps being formed, the bone sawn, and the arteries tied, the long flap is folded over the end of the bone; each of its free angles is then fixed by suture to the corresponding free angle of the short flap. One or two more sutures complete the transverse line of union of the flaps. At each side the short flap is united to the corresponding portion of the long one by a point of suture, and one suture more unites the reflected portion of the long flap to its unreflected portion. Thus the transverse line of union is bounded at each end by a short lateral line at right angles to it.

After the patient has been carried to bed, the stump is laid on a pillow, over which a large sheet of gutta percha tissue has been spread. *No dressing whatever* is required in the early part of the treatment. A light piece of linen or gauze is thrown loosely over the stump and pillow, and these are protected from the pressure of the bedclothes by a wire-work guard. To relieve tension the lateral sutures may be removed on the following day, but those of the transverse line may be allowed to remain until they are cast off, or appear no longer needed on account of the consolidated union of the parts. When the sutures of the transverse line have lost their hold, if the flaps should gape, a strap or two of adhesive plaster may be applied. Simplicity in the treatment is thus secured, as well as disturbance of the stump avoided.

To carry out these objects completely, the attendants and nurses

must be strictly enjoined not to lift the stump from the pillow without the authority of the surgeon. As there are no dressings to be soiled, and therefore to require removal, the stump generally need not be raised from the pillow for many days, or even for two or three weeks. When there is a discharge of matter, the nurse must remove it frequently by a soft sponge from the subjacent gutta percha, without lifting the stump.

The chief advantages of this mode of operating are—

1st. The avoidance of tension.

2dly. The formation of a soft covering for the end of the bone consisting of parts free from large nerves.

3dly. The non-disturbance of the plastic process, and the consequent placing of the large veins of the limb, as well as the smaller veins of the bone, in a condition the least likely to take up purulent matter and putrid blood or serosity.

4thly. The favourable position of the incisions for allowing a free outlet for purulent and other discharges.

The avoidance of tension is secured by the ample size of the long flap. For although the tonic contraction of the divided muscles is allowed to go on unrestrained by circular bandaging or adhesive dressings, the flap is still amply sufficient to cover the end of the bone; indeed, at the time of the operation it often appears superabundant, but in the result it is not found to be so, chiefly in consequence of the great retraction of the short flap.

The non-disturbance of the plastic process is the chief point on which the future safety of the patient depends. The long flap folding over the end of the bone, and being free from tension, soon acquires an organic union with it. The open mouths of the veins of the bone are thus early sealed; and the chief veins of the limb, protected in the retracted short flap, and undisturbed by unnecessary liftings and dressing of the stump, have also the best opportunity of becoming permanently closed, and of being thereby rendered incapable of taking up purulent and putrid matters.

There are, however, causes unfortunately beyond our control, which frequently oppose the plastic process. These are epidemic influence, hospital air, the peculiar condition of the general atmosphere, and, more serious than all, the effects of *shock*. The evils of shock are not only immediate, but also remote. A person in robust health may, by the immediate effect of shock from injury, have his life nearly extinguished, and may so far rally as to be submitted to amputation, but the *remote* effects of the shock are still in store for him. In such a case the vital condition of the blood and of the whole fabric of the body may remain so far lowered as to be incapable of setting up a *vigorous* process of repair.

How careful, therefore, ought we to be to husband to the utmost the feeble reparative power that exists.

Whilst briefly alluding to this part of my subject, I have much

pleasure in referring to the valuable essay of Mr. James, of Exeter, 'On the Causes of Mortality after Amputations of the Limbs.'

[Mr. Teale then proceeds to give the results of this operation during a period of three years, extending from June 16th, 1855, to June 16th, 1858. He says]

The operation has been performed 56 times. In 13 cases at the Leeds Infirmary by Mr. Smith; in 27 cases by myself, 23 of them being patients in the Infirmary, and 4 in my private practice; in 14 at the Leeds Infirmary by Mr. Samuel Hey; in 1 case by Mr. C. G. Wheelhouse in his dispensary practice; and in 1 by my son, Mr. T. Pridgin Teale, jun., in private practice.

To determine the value of this mode of operating in lessening the mortality of amputation, the facts hitherto at our command are manifestly insufficient; but, as far as they extend, their bearing upon this point is highly favourable. The results are more important, as they extend over so considerable a period of time as three years, and as being drawn from the practice, not of one surgeon, but of several.

The traumatic cases in this series form but a small proportion of the whole—namely, 6 in 56. It may, however, be remarked that of these 6 cases only 1 died; and that the two cases of amputation of the lower limb for accident both recovered. Whereas of 17 traumatic amputations performed during the same period of time in the Leeds Infirmary, by the same surgeons, 10 died, the deaths being in the proportion of 1 in $1\frac{2}{3}$ cases.

It is, however, only in the amputations of the thigh and leg for disease, that the numbers are large enough to warrant their comparison with the standard obtained at the London and provincial hospitals.

The amputations of the thigh for disease present 3 deaths in 17 cases, or nearly in the proportion of 1 in 6. In the London hospitals the ordinary amputations of the thigh for disease show a mortality of 1 in $4\frac{1}{2}$. In the provincial hospitals the mortality is 1 in 4.

The amputations of the leg for disease show a mortality of 1 in 27, which contrasts most favourably with the ordinary modes of amputating. In the London hospitals these amputations are attended with a mortality of 1 in $3\frac{2}{3}$, and in the provincial hospitals of 1 in 4.

The *character of the stumps* obtained by this method of operating may now be considered.

Their chief peculiarity consists in their having a soft mass of tissues, devoid of large nerves, moveable over the sawn end of the bone, which enables them to bear pressure on their extremity.

[This valuable pamphlet is illustrated by numerous wood engravings by Bagg, showing most of the amputations usually performed in Mr. Teale's way. The particular directions for performing each are also given. Our opinion may be slightly biassed by the friendship and

respect in which we hold the author; but we cannot but look upon this little work as one of the most valuable contributions to surgery which has for many years issued from the press.]—*Teale on Amputation by a Long and a Short Rectangular Flap.* Churchill, 1858.

50.—ON THE TREATMENT OF CONTRACTED JOINTS.

By Holmes Coote, Esq., F.R.C.S., Assistant-Surgeon to St. Bartholomew's Hospital, and to the Royal Orthopædic Hospital.

[Although the following remarks are limited to the knee, the principle of treatment is the same in every articulation of the body. The following propositions must be assumed as granted.]

1. Diseases of joints, whether acute or chronic, may be almost invariably referred to that state of constitution called struma in the young, and to rheumatism or gout in the adult.

2. The progress of the disease is always painful and tedious, but no morbid changes occur in any of the tissues by their nature irreparable. The synovial membrane may be thickened, but that is the first stage leading to its absorption; the articular cartilage may be removed, but the extremities of the bones become covered with other tissues; ligaments, softened and elongated, will in course of time become firm, and will even recontract, if put under proper and favourable conditions.

3. The severer changes with which we meet in practice are mainly due to want of proper maintenance of repose of the joint during the course of the disease. Where do we notice instances of inflammation of the cancellous texture of the bone leading to abscess? At the lower extremity of the femur, at the upper and lower extremities of the tibia, but not in the bones of the upper extremity. These accidents happen, then, just to those bones which support the weight of the body, and which have that weight thrown upon them when unfit to bear it.

4. If we except malignant disease—*i.e.*, the different varieties of cancer—there is no disease which does not run through its course to cure.

5. Inasmuch as articulating surfaces are, with scarcely an exception, pressed firmly together in the external position, and held loosely together when the limb is bent, in consequence of the direction and attachments of ligaments and fibrous bands, it follows that a joint, when diseased, is thrown into the flexed position by the patient, as being the easiest possible position.

6. That position may, after a time, become permanent, in consequence of the contraction of tendons, the formation of adhesions, or some displacement of the bones.

7. No attempt at extension and readjustment of the bones of a dis-

eased joint should be attempted, until all active disease is passed, and the patient is free from pain.

8. Whatever may be the course adopted, it is necessary to preserve the continuity of the surrounding tendons, that the extended limb may be under the control and direction of the patient.

I do not hesitate to avow my belief that, in the treatment of diseased joints, there has not hitherto been shown, generally speaking, sufficient patience on the part of the surgeon, combined with the strict maintenance of rest and proper support of the affected limb. An idea has prevailed that certain morbid changes demand amputation; and this measure has been adopted upon very insufficient evidence as regards the incurability of the affection. Less patience and pathological research still has been shown by those most enthusiastic in the cause of excision of the articular extremities of bones; and it is with a feeling akin to horror that I read of the performance of the operation upon infants of six years of age. Out of thirty recorded cases of excision of the knee-joint, seventeen of the patients were between six and sixteen years of age—in fact, just at that period of life when best able to surmount the exhausting influence of disease.

At the risk of being accused of insisting upon that which is generally acknowledged, but which I must add, if acknowledged, is not acted upon, I will briefly relate some cases to illustrate the progress of three forms of disease; namely,

I. *Common strumous enlargement.*
II. *Light brown pulpy degeneration of the synovial membrane.*
III. *Rheumatic inflammation.*

The cases which I will select will show not only how readily the process of repair goes on, if nothing is done to disturb its course, but likewise the frequent haste with which a joint is condemned; for, in nearly every case to which I shall allude, some severe operation had been recommended.

I. *Strumous Disease.*—I was requested on February 28th to give my opinion, in consultation, upon the following case. A little girl, aged 7, had suffered for two years from strumous enlargement of the right knee. The leg was drawn backwards into the ham, and rotated outwards by the action of the biceps; the limb was semiflex. Attempts at the extension of the joint by force had been tried, and had failed, although the ham-string tendons had been divided. The knee was hot and swollen. It was urged that, inasmuch as the tibia was displaced from the lower extremity of the femur, the limb could no longer be of use; and amputation was proposed. Upon my dissenting from such a course, the case was put into my hands. I bandaged the limb from the toe upwards, and applied to the popliteal space one of the padded splints now before you, bent to suit the angle

of the knee. A poultice was put upon the joint, until the heat had passed away; and then gentle pressure was kept up by means of the splint; and the knee is becoming daily straighter. I have no hesitation in saying that, in the course of a few years, there will be no trace (with proper precautions) of the present disease; but that a few weeks will suffice to enable the patient to leave her bed and walk with a stick.

Now, one of the surgeons who examined the case doubted the possibility of the replacement of the bones, and the future usefulness of the limb; and he accordingly accompanied me to a ward in St. Bartholomew's Hospital, where he saw the following case.

Mary Anne H., aged 22, sprained her left knee when quite a child, in Galway. The limb swelled and became painful; and the surgeon who attended her advised amputation. The parents would not consent, and ultimately she was able to creep about. For sixteen years she has walked upon crutches.

She was admitted under my care December 18th, 1857. The tibia and fibula of the left leg were rotated outwards, and drawn backwards, the leg being semiflexed, into the popliteal space. The lower end of the femur projected, supporting the patella: there were the remains of a fistulous passage quite healed. The toes were rather more than six inches from the ground. I divided the tendons of the biceps; and, having kept the divided ends in apposition for five days, I applied moderate extension by means of a weight (seven pounds) attached through a pulley to the foot. Immediate pressure to the displaced bone was made by splints.

February 24th. She walked, without crutches or other aid, from the ward; the foot having been brought four inches and a quarter nearer the ground. The bones of the leg had been partially brought under the femur; and she had a shoe with a high sole. Had I had at disposal such means as are to be obtained in private practice, I could have obtained a full half-inch more of length.

II. *Pulpy Thickening of the Synovial Membrane.*—In this form of disease, the synovial membrane becomes converted into a thick, soft, light brown coloured mass. The microscope shows that it consists of a multitude of granular corpuscles, which are acted upon by the absorbents; for the same materials are found in the neighbouring absorbent glands. The disease has been so well described by Sir B. Brodie, and is of so frequent occurrence, that no further description from me is necessary.

In opposition to the opinion of some of the most respected of my professional brethren, I am positive that this disease is not incurable. It constitutes a stage in articular disease, of which the changes are, absorption of the synovial membrane; absorption of cartilage; fibrous union between the denuded bones. In the summer of 1854, a young woman was in St. Bartholomew's Hospital, under my care, with this condition of the synovial membrane in the right knee. No operation

was ever seriously contemplated; but she would not listen even to an approach to the question. In the course of a few weeks, the pain and swelling subsided, and she quitted the hospital. I have seen her often since that time, and, with care, she manages to get about very fairly.

Now, what does pathological investigation show? In 1846, I examined a knee-joint amputated for this affection of the synovial membrane. The synovial membrane was thickened, softened, and discoloured, and overlapped the articular cartilage, which was loosened from the subjacent bone. The bone was vascular, but otherwise healthy. In 1850, I examined a knee-joint in an amputated limb, with the following result. The knee-joint was divided into three compartments, in consequence of adhesions between the remains of the synovial membranes: one between the outer condyle of the femur and the corresponding surface of the tibia; another between the inner condyle of the femur and the corresponding surface of the tibia; the third between the patella and the outer condyle of the femur. The cartilages were removed by absorption. Now, this joint had not been kept quiet during the active stage of the disease. The surfaces of the bones were rough and grooved, and locked into one another, the groove corresponding with the line of movement. The bone had also in parts inflamed, and become necrosed. In 1848, I examined a knee-joint, also removed by amputation for pain of the part, in which it was found that the tibia, fibula, and femur, were quite healthy, and united by fibrous membrane, the synovial membrane and the cartilage having been absorbed.

I believe that, in both forms of disease to which I have alluded, the changes consist in the gradual removal of the proper tissues of a joint, and of the union of the denuded bones by fibrous tissue. Bony anchylosis is of the rarest possible occurrence.

The idea of incurability should be dismissed; neither amputation nor resection should be thought of. The limb should be kept quiet until the morbid changes have come to an end; and the contracted limb should be slowly extended.

III. *Rheumatic Disease.*—Rheumatic disease is either acute or chronic, and the former is often very severe; but I doubt in the frequency of well managed cases requiring amputation. Last September a young man, a sailor, was admitted into St. Bartholomew's Hospital, with acute rheumatic inflammation of the left hip. So severe were his sufferings, that I am sure amputation would have been recommended, had the knee-joint been the seat of the disease. The cartilages were absorbed, and the head of the femur ulcerated, so that the limb was shortened and everted. But, after a time, the pain subsided, and the limb was brought down; and he quitted the hospital—on a crutch it is true; but experience shows us that ultimately he will be able to bear upon the limb.

A young girl is at the present moment under the care of my colleague Mr. Tamplin, at the Royal Orthopædic Hospital. She suffered in 1853 from acute rheumatic inflammation of the right knee. Amputation was at one time thought of by the surgeons who attended her, so severely did she suffer. She was admitted September 4th, 1857. The legs was firmly semiflexed on the thigh, but all pain and swelling had subsided. A proper instrument was applied.

January 4th, 1858. The leg is so much straighter that she can support herself upon the toe.

February 22nd. The limb is still under treatment. She can put her foot to the ground.

After rheumatic disease, bony anchylosis is not so very uncommon. There is a wide difference in this respect between the consequence of rheumatism and of struma. More force is, therefore, frequently required in the extension of contracted limbs from rheumatic disease; and such a proceeding may even be unadvisable in some situations, such as the carpus. A young woman is now under Mr. Lawrence's care, in St. Bartholomew's Hospital, who, under one attack of rheumatic fever, suffered from contraction of all her joints. The bones of the left wrist appear united by bony anchylosis.

There are three methods by which we may extend a contracted joint.

The first, namely, that adopted by Louvrier and Dieffenbach, I will briefly notice, as utterly unfit to be practised, owing to the dangerous, violent, and unscientific nature of the proceedings. The bands of adhesion, contracted tendons, and all resisting structures, were forcibly torn asunder; the limb, once straightened, was held so mechanically until the tendency to contraction was overcome. So serious were the results (and some cases ended fatally), that the scheme was soon abandoned, and is now rarely resorted to, except by some surgeons in exceptional cases of impaired movement of the elbow after injury. It is a proceeding I cannot recommend.

The second consists in the subcutaneous division of tendons, followed, at an interval of seven days, by the forcible rupture of adhesions. The limb is then put up in the flexed position, and after six or seven days, the soft uniting material is slowly elongated by a proper apparatus. This plan is recommended in some cases by Mr. Brodhurst. ('Medico-Chirurgical Transactions,' vol. xl.)

The third consists in the slow elongation of the contracted tendons and uniting bands, without forcible rupture, but with or without the subcutaneous division of tendons. This plan is the one usually adopted at the Orthopædic Hospital, and is recommended by Mr. Tamplin. As plan No. 2 has been already well described in the 'Transactions' of this Society, I shall confine my remarks to the third plan.

But before mentioning some cases by which the particulars of the proceeding may be illustrated, I would call attention to a course which

unhappily combines the evil of the first and second plan, without any of the attendant advantages. Some surgeons have first subcutaneously divided the tendons; next they have immediately extended the joint by force, the patient being under the influence of chloroform; thirdly, they have put the extended limb into an immovable apparatus, as if they were dealing with unorganised parts. One moment's reflection would show that, independently of the uncertain amount of injury inflicted, by which dormant disease may be roused into activity, the ends of the divided tendons are widely torn asunder, and cannot be expected to reunite so as to afford the proper support to the joint; while such fibrous bands as, by their position, admit of reunion, will again be liable to re-contract, inasmuch as the newly deposited material has all the properties of a cicatrix.

That which is wanted is extension—not laceration; and, if we divide a tendon, we carefully keep the divided ends in apposition, until a new and yielding substance has been effused between them. This was first pointed out by Delpech.

Fibrous adhesions admit of great elongation under slowly applied pressure; and such pressure causes the absorption of the contracted element, so that the elongation is permanent.

The careful examination of a contracted joint is necessary, in order that we may form a just prognosis, and determine upon the exact nature of the apparatus and method of treatment to be adopted. In the first place, we must ascertain whether there is motion, and, if so, what is the amount: in the next place, the nature of the obstruction, or the cause of resistance; thirdly, we must ascertain whether the patient possesses any voluntary power over the limb.

"After these preliminary inquiries," remarks Mr. Tamplin, "let an assistant hold the thigh firmly, while you attempt to extend the leg forcibly. If you are able to extend it in the slightest degree, and the patient complains of pain on the anterior surface of the joint, however slight the motion obtained in this way may be, your prognosis will be favourable; and even in those cases where there is no perceptible motion, if the patient complains of pain in the situation mentioned, you may anticipate the possibility of removing the contraction. It is also as well to examine the patella, and ascertain whether it admits of motion in a lateral direction." ('On Deformities,' p. 159.) The character of the motion is then to be ascertained. "If it is a steady motion, and if, upon an increase of extension, the flexor tendons are rendered more tense, you will regard the resistance as confined to the muscles principally; if, on the other hand, you find, upon keeping up the extension for some seconds, that the joint returns to the contracted position with an elastic impulse, you may anticipate resistance arising from adhesions in the joint itself. If you find free motion beyond the contracted or flexed position—that is, if you are enabled to increase the amount of flexion without difficulty, with as much ease as can be done ordinarily—this will be a favourable circumstance." (Op. cit.)

But if a joint be immovable, and occasions no pain upon examination, and if, upon continuing extension, the muscles relax themselves, it is hopeless to attempt restoration by ordinary methods.

The instruments used have been constructed by Mr. Fergusson of Giltspur Street, and are well worth an attentive examination. It will be observed that, in place of the old male and female screw at the back of the splint, there are screws at the side which may be so arranged as to give not only the movement of flexion and extension, but likewise abduction, adduction, and rotation. Thus the leg drawn backwards into the ham, rotated outwards, and bent, may be slowly extended, may be rotated inwards, and pushed forwards under the extremity of the femur, pressure upon any sensitive spot being relieved by some combination of action.

The apparatus is very commonly adapted to a boot by which the proper position of the foot is maintained. Provision is made for flexion and extension of the ankle.

The use of this instrument requires care and constant supervision. The great secret, whether any tendons be divided or not, consists in the gradual and painless, yet steady and unremitting application of the extending force.

The following cases have been selected out of many to illustrate its use.

Emma R., aged 8, fell on the left knee three years ago at Cheltenham, and, as she says, put her kneecap out.

A year ago she attended the Royal Orthopædic Hospital as outpatient under Mr. Tamplin. The knee was at this time very much contracted. It was treated upon the principles laid down by the late Mr. Scott, and the patient could walk about with a stick. By this treatment some improvement was obtained.

Sept. 6, 1857. She was admitted into the Orthopædic Hospital. The limb was still much contracted and swollen, but not painful. The usual instrument was applied.

Feb. 26 The knee is of natural size; the leg is almost straight upon the thigh.

Fanny T., aged 15, a delicate girl, had for the last six years suffered from inflammation of the lungs. Three years ago she experienced weakness in the right knee, accompanied with cramps; she became a patient in the Northampton Infirmary, where she was treated, and subsequently discharged. The pain still continued, though diminished, and the leg at right angles to the thigh.

Feb. 15. She was admitted into the Royal Orthopædic Hospital, under Mr. Adams, when the usual instrument was applied.

Feb. 28. The leg is nearly straight; the joint is free from pain.

I have selected these cases out of many, as showing what may be done with common precaution and care; and when I am met with that most unworthy of all arguments—that such a practice is all very well for the rich, but does not answer with the poor, who cannot spare

either time or attention, I reply, that to the poor especially is the preservation of a limb of paramount importance. Those who thus speak, seem not to know how many months, and sometimes years elapse before an artificial limb can be worn with comfort; how many means of obtaining subsistence are debarred from one so mutilated; I uphold that any length of time is well spent, which gives the patient the chance of escaping this dreadful alternative, from which, as Mr. Hussey of Oxford has shown, not only do many die, but many more never thoroughly recover.

I will conclude by describing the way in which the hamstring tendons are divided and treated, when this proceeding becomes necessary in combination with the above.

Let the patient lie horizontally on his face; an assistant grasps and extends the leg. A small sharp-pointed knife is passed to the inner side of the tendon and beneath it horizontally. As soon as it is fairly under the tendon, turn the sharp edge upwards, and divide from within outwards, *i. e.*, from the popliteal space to the skin. The biceps flexor cruris is usually the most tense, but such is not always the case. Sometimes the outer hamstring tendon alone requires division; sometimes both outer and inner. In many cases after the division, the tendon's numerous tight bands spring up when the extension is kept up. Care must be taken not to wound the popliteal vessels and nerves, should interference with them be deemed necessary. Extension generally suffices. The operation being completed, pledgets of lint are put on the wound, and fixed there by adhesive plaster. The limb is supported by a bent turned splint, and rolled from the foot upwards. It is best to allow a week to pass before any attempt at extension is made, because by proceeding too quickly, the parts of puncture may be irritated, and the treatment delayed. The chief danger consists in the division of the peroneal nerve; and such an accident has happened. It occasions the patient considerable alarm, but in the course of time the divided nerve reunites, and sensation and motion are both restored.—*British Med. Journal, Sept.* 18, 1858, *p.* 785.

51.—SCOTT ON THE TREATMENT OF JOINTS AND OF ULCERS, AND CHRONIC INFLAMMATION.

Edited by William H. Smith, Esq.

At a moment when the tide of conservative surgery seems to be somewhat on the turn, and Scott's plaster, with various orthopædic contrivances in diseases of the joints, appear to be taking the place of resections of the articulations of the knee; at a time when the pre-tubercular epoch of "morbus coxæ," is engaging the attention of our chief surgeons, and absolute rest of joints is again inculcated in hospitals, Mr. Wm. H. Smith has done good service to surgery by publishing the work of John Scott. We need scarcely say that though not

openly recognised in our more strait-laced schools, yet Scott's plan is constantly adopted in nearly every one of our London hospitals.

We believe we shall be doing a service, therefore, to some of our provincial readers by detailing the steps of the plan of treating disease of the joints, so long recognised in our London institutions. We will take a case of common "white swelling."

"In the first place, the surface of the joint, suppose the knee, is to be carefully cleaned by a sponge, soft brown soap, and water, and then thoroughly dried; next, this surface is to be rubbed by a sponge soaked in camphorated spirit of wine, and this is continued a minute or two until it begins to feel warm, smarts, and looks somewhat red. It is now covered with a soft cerate, made with equal parts of the ceratum saponis and the unguentum hydrargyri fort. cum camphora. This is thickly spread on large square pieces of lint, and applied entirely around the joint, extending for at least six inches above and below the point at which the condyles of the femur are opposed to the head of the tibia. Over this, to the same extent, the limb is to be uniformly supported by strips of calico spread with emplast. plumbi. These strips are about one inch and a half broad, and vary in length, some are fifteen inches, others a foot, others half these two lengths, the shorter or longer of course selected according to the size of the part round which they are applied. This adhesive bandage ought to be so applied as to preclude the motion of the joint, and prevent the feeble coats of the bloodvessels from being distended by the gravitation of their contents. Over this adhesive bandage, thus applied, comes an additional covering of emplastrum saponis, spread on thick leather, and cut into four broad pieces, one for the front, the other for the back, the two others for the sides of the joint. Lastly, the whole is secured by means of a calico bandage which is put on very gently, and rather for the purpose of securing the plaster and giving greater thickness and security to the whole than for the purpose of compressing the joint."

In cases of chronic synovitis, as well as in those innumerable joint affections included under the term "white swelling," this method of Scott's is in constant use at St. Bartholomew's Hospital, the London Hospital, and other institutions. Without committing ourselves, however, to the opinion that there is anything in the "Scott plan" that might not be as readily attained by starch or gypsum bandages, yet, from all we hear, we believe it is very worthy of a trial. Patients, when sick, who are laid up with troublesome old disease of joints, are ever wishing for something new: if, therefore, legitimate practitioners are not ready to obey the apostolic command, to "prove all things," holding fast by whatever is useful or good, if practitioners, in the provinces especially, be not made aware what is going on in our large hospital institutions, their practice passes away into the hands of quacks.

It is now discovered that what Professor Syme instinctively dis-

covered several years ago is true, that resections of the knee-joint are a mistake, and more might be done by temporising methods, such as this one under review.

The pathology of John Scott is occasionally of a rather too original kind, it must be confessed, as when he speaks of the flattening of the nates in "morbus coxæ," but then we do not look for modern pathology so much as for practical hints in a book first published in 1828. The batch of cases, also, we would rather pass over, as with our advanced knowledge of treatment now in 1858, what with cod-liver oil, steel, rest, sea air, &c., all such cases are more scientifically treated than they were thirty years previously.—*Med. Circular, Feb.* 17, 1858, *p.* 79.

52.—ON THE RESTORATION OF MOTION BY THE RUPTURE OF THE UNITING MEDIUM OF PARTIALLY ANCHYLOSED SURFACES.

By Bernard Brodhurst, Esq., Assistant-Surgeon to the Royal Orthopædic Hospital.

[Except that of the maxilla, anchylosis of the hip causes more inconvenience than of any other joint, especially in sitting and riding. Three cases on which the author has operated have been in mounted officers, and though in two of these only partial motion was procured, the greatest relief was obtained from the pain and inconvenience before experienced. With regard to partial anchylosis of the hip-joint, the following interesting cases are related.]

Case 1.—March, 1856. L. S., 13 years of age, light-haired, and of a strumous complexion, was attacked with inflammation of the hip-joint three years prior to the above mentioned date. She was attended at the commencement of the affection by a surgeon in the neighbourhood of the metropolis, and was actively and very judiciously treated. Pain, however, was scarcely alleviated by the treatment: suffering was very great; the nights were passed without sleep, and the health had become seriously impaired.

When I first saw her pain had entirely ceased, and had not been felt during the preceding four months. The hip-joint was fixed, and without motion, at such an angle that, standing upright, the toes of the affected limb could just touch the ground, the heel being raised; the pelvis was very oblique; the spine was slightly curved; the right buttock was flattened; the limb was wasted: it was, however, by measurement the same length as the other.

Having fixed the pelvis with one hand, I suddenly flexed the thigh, jerking the limb, without using much force. The adhesions were soft, and yielded readily. Very slight pain followed the rupture. A gutta-percha splint was applied, and was not removed for eight days, at the

expiration of which time passive motion was instituted. At first gentle movements only could be borne; but they were gradually increased, until the limb could be perfectly flexed and extended.

For six weeks after the rupture there was scarcely any voluntary power of flexion of the thigh, notwithstanding that tenderness on motion had ceased. From this time, however, motion began to increase, so that in the course of another six weeks there was considerable power of voluntary motion. Obliquity of the pelvis was in great measure overcome, and the sole of the foot was in contact with the ground. The foot could now be thrown well forward in walking. Five months after the operation the thigh could be flexed without assistance beyond a right angle, and it could be fully extended; the pelvis had regained its horizontal position, and the foot could be well flexed in walking.

In March, 1857, this patient walked with a stick, but firmly.

March, 1858. In regard of size and firmness the two limbs were nearly equal; the buttock also had nearly regained its normal size. A stick was used for support when she walked to some distance from home; but in the house it was not now used. All the motions of the hip were perfect, and they could be employed unaided, except extreme flexion of the thigh. This thigh could not be flexed so perfectly as the other.

Case 2.—J. M., an officer in a cavalry regiment, early in the year 1854, in India, joined a shooting party, and having been for some days on marshy ground, was attacked with rheumatism, and had to be carried home. He remained confined to bed for three months, suffering acutely, so as not to have been able to change his posture during the early period of his illness. A large bed-sore formed over the sacrum, and effusion was so great around the hip that suppuration was feared. Happily, however, swelling subsided; but it was found when motion was at length attempted that the hip was fixed and immoveable. Several months elapsed before he was able to resume his regimental duties, and then he found the fatigue of walking excessive, and his seat in the saddle most insecure; he also suffered excruciating pain on dismounting. These circumstances induced him to return home, for which he obtained leave.

March 5, 1857. He walked into my room, leaning on a stick. I found the thigh fixed in the extended position, and immovable at the hip-joint; the extremity was of the same length as the sound limb; the pelvis was slightly oblique. I proposed to give chloroform, and to proceed to rupture the adhesions at the same time, should they be found to be fibrous. To this he assented, and the following day was appointed for the examination.

The full effect of chloroform having been obtained, the pelvis was firmly fixed by an assistant, when it was immediately apparent on endeavouring to raise the leg from the bed that the adhesions were fibrous. A jerk in the direction of flexion was sufficient to separate

them, and the rupture took place with an audible snap. The motions of the joint were immediately free. The limb was then bandaged, and encased in a splint, and thus it was allowed to remain undisturbed for five days. Very slight pain was felt after the rupture, so that opiates were not required. On the sixth day passive motion was commenced. Only very gentle and limited movements were at first permitted, for considerable tenderness in the joint was complained of on moving the thigh. This tenderness, however, soon ceased to be felt, or the pain was not more than could easily be borne, and the splint was discontinued on the fourteenth day. After six weeks the thigh could be raised unassisted to a right angle with the trunk, and the limb could be fully extended; extension was executed slowly, but flexion by twitches rather than by a steady muscular action. The obliquity of the pelvis was entirely removed. The patient could walk without limping and without support for some steps if he walked slowly; he could also sit flat on a chair, and he could even straddle across a chair, sitting in the centre of the seat; but both of these positions were painful, and the latter could only be borne during some seconds. Passive motion, especially of flexion and abduction, was continued vigorously for several months; and, indeed, until the present time it is carried on daily. Now he can mount his horse comfortably, and can remain in the saddle, he says, "any number of hours," and has no pain on dismounting, but stiffness only. The motion of the joint is not so free, however, as I could wish to see it; but I have little doubt that whatever rigidity yet remains, will be in time removed.

Case 3.—F. C., 25 years of age, an officer in the Royal Artillery, suffered, whilst he was stationed in Ceylon, from rheumatism, in 1855. He was confined to bed during many weeks, and suffered excruciating pain. Several joints were inflamed, as the shoulders, knee, hip, and ankle, but all recovered well except the hip. The effusion around the hip was more than about any other joint, and the swelling was so considerable, that it was feared suppuration would take place. However, it subsided, and at length it was discovered that the motion of the joint was lost. He returned to England some few months later, and consulted a surgeon of the highest eminence, with a view to regain the motion of the joint. No hope was held out that motion could be restored, but on the contrary, he was assured that he must take his stiff joint with him to the grave. And in consequence he abandoned all hope of accomplishing his object. He was unable to perform his military duties satisfactorily, and he therefore now determined to leave the army. He expected to receive his captain's commission from day to day, and he proposed then to sell out.

At Christmas 1856, he heard of a case somewhat similar to his own, where I had ruptured the adhesions and restored the motion of the joint; and by the advice of Dr. Wood he in consequence

came to me. I found both lower extremities of the same length; the head of the femur in its normal position; the buttock much flattened, and the limb slightly wasted. The limb was extended, and there was no power of flexion, nor of motion at the hip-joint, except a very slight (just perceptible) lateral motion. This motion, slight as it was, was sufficient indication that the adhesions were fibrous; and I gave an opinion in accordance with this view, and stated that the adhesions might be ruptured, and that the power of motion might be restored. He was about to proceed with troops to Canton, but he was anxious to have the operation performed before he went on board ship. I stipulated that I should have the power of watching him for six weeks after the operation. He was unable to promise this, however, as it was doubtful when he might receive orders to embark. The operation was therefore deferred until his return from China. Ten days later he embarked, expecting to leave the port on the following day, when an order was received to detain the vessel for three weeks. He immediately obtained leave of absence, and returned to London. The operation was done the day next but one following.

Jan. 24, 1857. The full effect of chloroform having been obtained. I fixed the pelvis with one hand, and with the other jerked the limb, without exerting much force, two or three times, when the adhesions yielded and gave way gradually, allowing the thigh to be flexed to its full extent. A gutta percha splint, which had been previously prepared, was then applied, and the limb was bandaged. On recovery from the effects of chloroform, my patient could scarcely believe that the operation had been done. He had no pain. Slight tenderness was felt in the course of the evening, but he slept well at night without any opiate. He remained in bed during the four following days, at the end of which time the thigh was slightly flexed and again extended. After two more days the splint was discontinued. The limb was now moved every day, the joint being worked gently, and to a slight extent only at first; but soon more violent and extended movements could be borne, and ropes and pulleys were used. A stick was at first used for support in walking about the house, but it was soon discontinued, for he could walk firmly and without lameness. Beyond the house, however, a stick was used for some weeks. Before three weeks had elapsed, he had walked two miles from his lodgings. I was alarmed when I heard what had been done, and feared for the result; but, happily, no harm was done. Some slight tenderness of the joint and rigidity of the limb followed; it passed away, however, rapidly, and after twenty-four hours the motion of the limb was as perfect as before. Six weeks after the operation the thigh could be flexed voluntarily beyond a right angle, and it could be abducted to within one inch of its normal range of motion. To show how sound the joint had become, I may mention that my patient could sit on his

heels, each heel being equally in contact with the corresponding tuberosity of the ischium.

March 24. Exactly two months after the operation, the communication, to which I have already alluded at the head of this paper, was read before the Royal Medical and Chirurgical Society, and by his own desire this gentleman was present. Many then had an opportunity of seeing him walk, and some also were there who were able to judge of the change which had been effected, having seen him previous to the rupture. He walked without the slightest halt, and without support. I received a letter from him, dated December 24, 1857, from which I quote the following sentences :—

"I walk occasionally twelve or thirteen miles a day; not bad, I think. The buttock has filled out wonderfully."

He was then, and had been for some months, performing his military duties. Now, I am glad to say, he has gained his promotion; and yet, I am more glad to add, he has no intention of leaving the army.

Case 4.—June, 1853. A. G., 7 years of age, a small, ill-nourished, irritable, dark-haired child, suffered two years before this period from acute inflammation of the hip-joint, which was thought to be rheumatic in character, and which had followed exposure to wet and cold. When I first saw this child the thigh was flexed at a right angle with the trunk, and it was immovable. Under the influence of chloroform just perceptible motion could be obtained. A sudden jerk ruptured the adhesions with an audible snap, when the entire range of flexion and extension was immediately gained. Some pain was felt during that and the following day, to allay which opiates were given. Afterwards pain was felt only when the joint was moved. This tenderness lasted for ten days. After this time the limb was moved every day, and each day a more extended range of motion was gained; also the child was encouraged to move about the house, that the limb might thus be brought into action. Voluntary power was gradually, but slowly, developed. The limb remained very feeble during several months.

In this instance the limb was much wasted; it was, however, of the same length as the other limb. It was evident that infantile paralysis to a slight extent was superadded to rheumatic inflammation, and that some of the muscles, especially the extensors of the leg, had lost their power of action. Myogenic paralysis is not uncommon in childhood. I have only observed it in two instances, however, combined with partial anchylosis. Stimulating liniments, galvanism, and other excitants were used, while the limb was moved daily, to insure the freedom of the joint.

After two years the thigh could be raised beyond a right angle with the pelvis, the leg could be thrown forward in walking, and a stick only was used for support.

August, 1857. The limb had nearly recovered its normal size; the

buttock had filled out, though it was yet somewhat flattened; the motions of the hip-joint were perfect; and in walking about the room feebleness was not observable. After taking more than slight exercise, however, drooping of that side was apparent. No support was used. Stimulants were continued. There is little doubt that the power of the limb will be in time restored.

Case 5.—May, 1856. H. S., 12 years of age, light-haired, with a florid complexion, was attacked with inflammation of the hip-joint after sitting on a damp bank, two and a-half years before I saw her. She suffered acutely when inflammation was first developed, and was treated at the time actively, yet it produced only partial mitigation of suffering. This acute pain lasted nearly six months, when it began to diminish, and ceased entirely about ten months from the commencement of the attack. The thigh had become flexed upon the pelvis, during the period of confinement to bed, at an acute angle; the pelvis was very oblique, and the spine was curved laterally; the heel could barely reach as low as the knee of the opposite side; the buttock was much flattened, and the muscles of the limb were wasted, but the limb itself was not shortened.

The adhesions, which appeared to be extra-capsular, yielded readily on the application of two or three sharp jerks, suddenly and completely. The limb was then bandaged and placed in a gutta percha splint, and so left perfectly at rest for a week. A very slight degree of pain followed the operation, and even when slight movements were commenced, on removing the splint, they were scarcely complained of. In the course of three months, the thigh could be flexed and extended passively to the full extent of normal motion, little or no pain being excited; there was very little muscular power, however: the patient could walk across the floor with a stick and a crutch, and without dragging the leg, but without lifting the foot. Stimulating liniments were used, and a small blister was occasionally placed behind the trochanter. A visible effect was produced in the course of some months, for muscular power was sensibly increased; yet progress was slow. In the summer of 1857, the thigh could be flexed, though not fully, and the patient could walk without other support than a stick. The obliquity of the pelvis had been entirely overcome, as well as the lateral inclination of the spine, without any special treatment being directed to either. Also, the tendo-Achillis, which was extremely tense, yielded and allowed the foot to be well flexed in walking. At the present time a stick is used in walking, except in the house. There is much muscular power wanting, and I doubt if it will ever be perfectly regained.—*Med. Times and Gazette, June* 12, 1858, *p.* 597.

53.—*On Tumours occurring in the Neighbourhood of Joints.* (An abstract of a paper read by Mr. BARWELL, before the Medical Society of London.)—The author pointed out that a large number of

widely different sero-synovial cysts were confounded together under the name of ganglion, so much so that systematic authors describe such disease in widely different manners, and their accounts disagreed so greatly that it was impossible to reconcile them; and he proposed to show, from the histories of their formation and their constitution, what are the chief varieties of such tumours. It appeared from his (the author's) dissections that there might be found in certain joints of persons who had led a laborious life, little projections from the synovial membranes, which had been considered in France as normal structures, and called synoviparous crypts. Mr. Barwell considered them abnormal, the result of over-exertion, whereby a portion of the membrane, yielding to a pressure from within, protruded beyond its surface into the subsynovial tissue, or into a mesh of the ligament itself. When once arrived in that place, the little projection or hernia from the membrane might increase and pass through the fibrous structure, be it ligament or tendinous sheath, so as to form a more or less globular swelling superficial thereto. The author had found these in all their different conditions; the simple hernia from a synovial membrane communicating by a tube, more or less large, with the interior of the sac; such tumour also when the tube had closed, and left simply an imperforate cord whereby the point of origin might be determined; and the perfectly independent cyst, where it had broken away entirely from the original membrane. This was the only mode of origin for true ganglion; mere enlargements of bursæ were not to be considered as coming under the same category. Another form of disease which, from the symptoms enumerated, had been described as ganglion, was dropsy of synovial sheaths. In this malady, not only a portion, but the whole of the sac was involved: and in this lay the distinction between the two. The dropsy which was most common was of a very chronic description, and originated in the disease called painful crepitation of the fingers. The form of the tumour produced varied not only according to the size and shape of the sheath itself, but also according to the fibrous structures which bound it down; it was, however, nearly always lobulated, and was soft, fluctuating, and more or less diaphonous according to its depth from the surface and the nature of its contents. In many instances it contained great numbers of melon-seed bodies, which add greatly to its inconvenience, as well as the difficulty of its cure. One of the most common seats of this disease was the large bursæ in front of the carpus, and at this spot such tumour always contained melon-seeds; the disease was therefore grave, not only on account of its contents, but also of its size. He (Mr. Barwell) had paid considerable attention to, and had made many dissections of, this part. (The anatomy of the bursæ was described by means of carefully-drawn diagrams.) He showed that there were two carpal bursæ—the outer, around the flexor tendon of the thumb; the other, lubricating all the fingers, so reflected as t.

divide itself into three cavities: one between the carpal ligament and the superficial tendons; the next between them and the deep tendons; the third between the deep tendons and the carpus itself. This division into three layers of cavity explained many peculiarities of the affections of this part. In dropsy thereof, with sero synovial melon-seed contents, the bi-sacculated form of the tumour produced by the constriction of annular ligament, the fluctuation from palm to wrist, and a peculiar moist crepitation, were characteristic. The author observed that the chief object of the present paper had been to point out the difference in history and origin between cases in which a portion only of a synovial membrane was affected, as in the first described form of tumour, which are true ganglia, and those other formations in which the whole of a synovial sac was diseased. Such pathological distinction must lead to a more definite and applicable treatment, as the means of curing an independent cyst would be different from those employed on a synovial cavity, or in a hernia from such cavity. A ganglion, when fully formed, he said, was an independent cyst, and might be treated as such by producing inflammation that should cause adherence of its walls; but if the tumour had not become independent, such means were dangerous. There were several signs whereby the condition of such tumours might be estimated, very slow reduction by evacuation of the cyst being the chief; and when it was found that an opening between it and the joint still remained, other means must be employed.

Mr. Barwell showed an ingenious instrument whereby pressure upon such tumours might be graduated, while perfect rest was obtained.—*Lancet, June* 12, 1858, *p.* 591.

54.—ON RESECTION OF THE HEADS OF THE PHALANGES OF THE FINGERS, AND OF EXCISION OF THE ENTIRE UNGUAL PHALANX.

By E. J. Chance, Esq., Senior Surgeon to the Metropolitan Free Hospital and City Orthopædic Hospital.

The first case in which I adopted the plan of resecting the ends of the phalanges, and which, from its success, led me to extend the practice to *diseased* joints of the fingers, was an unreduced dislocation of the extreme phalanx of the thumb, which had existed two years.

In this case, not only had the bone been dislocated, but the extremity of the first phalanx forced through the skin in the front of the thumb.

The condition of the part when I first saw it was as follows: The point of the thumb projected backwards nearly at a right angle, and was firmly retained in that position. The articulating surface of the ungual phalanx rested on the back of the digital extremity of the first phalanx, and this latter part formed a protuberance on the front

of the thumb, which could be distinguished by its pulley-like shape, through the tense skin. As the extremity of the thumb pointed directly backwards, the protuberance formed by the digital extremity of the first phalanx in front constituted the *only* part that could be opposed to the fingers in grasping, &c., and as the skin and cicatrix over this protuberance were so exquisitely tender that the slightest pressure on them caused intense pain, from its being brought to bear upon the misplaced nerves, the entire hand was comparatively useless, and the patient, who was a housemaid, was compelled, on that account alone, to give up servitude and become dependent on her friends. Under these circumstances, she applied at the City Orthopædic Hospital in 1853. As I found reduction entirely out of the question, I determined, at the suggestion of my friend Mr. Pollock, and with the approval and assistance of my colleague, Mr. N. H. Stevens, to remove the head of the first phalanx.

The operation was performed by raising a flap on the front of the thumb, and sawing off that portion of the head of the bone which prevented the ungual phalanx from taking its proper position. But little bleeding ensued. The part was afterwards put up, in a slightly flexed position, in a splint made of a piece of card. The wound healed readily, and we had the satisfaction a fortnight afterwards of witnessing a perfect cure. The splint was worn for some weeks afterwards for safety. About three months after the operation, as the joint was firm, slightly movable, and the thumb *could be used with perfect freedom and without pain*, my patient accepted another situation as housemaid. I have seen her every five or six months since, and I can report that a few days back she was still in a situation, and her thumb quite well.

The foregoing case having terminated so successfully, I determined to try the same mode of procedure in a case of *caries* of the heads of the phalanges; and in January, 1856, I had an opportunity of so doing, as Mr. Pollock placed under my care a case that appeared to him appropriate for such treatment. In this case the patient was a labourer at a brewhouse, and had had his hand severely injured by a barrel falling on it. The extreme joints of the third and fourth (middle and ring) fingers were both carious, the bones grating perceptibly against each other whenever they were moved; and there was an opening into the joint of the fourth (ring) finger, but not in that of the third finger. In this case I made the flap on the back of the finger, and removed, with a fine saw, a *thin* slice of the head of the second phalanx of each diseased finger, and a like portion from the articular extremity of the ungual phalanx of the fourth finger. The articular extremity of the ungual phalanx of the third finger was not carious, and therefore not removed. The parts were then put up, as in the former case, on splints made of a piece of card; but in this case the fingers were kept *firmly and fully extended*. This case was also well in a fortnight; but, as in the former instance the use of the

splints was continued for some months, to prevent the contraction of the flexor tendons. The operation was performed in March, 1856, and in the following September the man resumed his laborious manual occupation at the brewhouse. I saw him a week ago, when his hand was still quite well, and he then informed me that he had been at work constantly from the time he returned.

In the foregoing cases it will, without doubt, have been noticed that in each the hand was so materially damaged as to deprive the individual of the power of following his or her ordinary avocation of manual labour, and that in each case the result was so completely successful as to restore that power, and to enable the one to obtain her own livelihood; and the other to support himself and family. "Resection of the *heads* of the phalanges of the fingers," is, therefore, *in appropriate cases*, a procedure in every way *worthy of attention and adoption.*

As my object, upon the present occasion, is chiefly to draw attention to the success attending this mode of treating injuries, &c., of the fingers, and not to discuss any particular mode of removing the diseased parts, I shall not enter further upon this latter subject than to observe it must be evident the method adopted to expose the bone will of necessity vary in each case, as exemplified in those I have narrated; but, I cannot refrain from advising that the removal of the bone itself, *the essential part of the operation*, should be *always* made by a very fine (watchspring) saw, and not with the bone-nippers, inasmuch as however sharp the bone-nippers may be, they of necessity inflict an amount of *compression* upon the healthy bone, which, considering the small size of the shaft of the phalanges, would be sufficient to prevent the ready healing of the parts, and thereby tend to frustrate the end proposed by the operation.

In the three operations I have described, two consisted of a removal of a portion of one bone only—viz., of the head of the second phalanx; and one of a portion of the articular extremity of each of the bones composing the joint. In this latter instance the bones have become nearly anchylosed; in the former, they permit of a slight degree of motion. This difference in the termination in the two fingers of the same case brings us back to the consideration of the point mooted in the words "in the treatment a false joint will be sought for" as formerly quoted, and it likewise gives rise to the following practical questions—viz., 1st, whether a false or an anchylosed joint in these cases is to be preferred; and, 2ndly, whether it is within our own power to secure the one or the other.

The reply to the first of these questions will, doubtless, be different in different cases and under different circumstances in life; for my own part, and as regards the man whose case I have narrated, I think it would have been better for him if both the joints had been fixed. In the case of the girl, there is positive motion, but I do not consider it of sufficient *extent* and *freedom* to weigh much in the consideration of the matter. There is, however, another consideration of far greater

importance—viz., the angle at which the joint is allowed to become fixed.

With respect to the second question. I am of opinion that *it is* in our power to secure either the one or the other.

It is manifestly obvious that this operation—"resection of the *heads* of the phalanges"—is only adapted to those cases in which it is the *articular extremity alone* of the phalanges which requires to be removed, and in such cases the less removed, so that it *answers the end proposed*, the better. There is, however, another class of cases of much more frequent occurrence, which borders so closely upon the former, that I am led to append a few observations upon it, and the more so as I am not aware that the practice I would advise is noticed in surgical works. I allude to the carious condition of the *extremity and shaft* of the ungual phalanx, which is so frequently seen as the result of neglected or wrongly treated onychia; and, occasionally, of mechanical injury to the finger, which I have been in the habit for years of treating by "excision of the *entire ungual phalanx*."

Such cases as these are of frequent occurrence amongst the out-patients of hospitals generally. I have had many such at the Metropolitan Free Hospital. When such a case is first seen, the end of the finger is considerably enlarged, there is an opening on the front or side, leading down to the carious bone, which can be immediately detected by a probe; and from the orifice of the wound, in all probability, a rugged portion of the diseased flexor tendon will be seen to protrude. If such a case as this is left to itself, and if the caries is *confined to the ungual phalanx alone*, after a *considerable period of time* (weeks upon weeks), the lateral ligaments become destroyed, and the bone comes away of itself; or if, on the other hand, the caries passes to the head and shaft of the second phalanx, it then causes the loss of the entire finger.

The treatment that I would recommend as the result of my own personal experience is the early removal of the carious ungual phalanx. This proceeding is easily accomplished by enlarging the existing wound, and dividing the lateral ligaments. After the removal of the bone, the sides of the tip of the fingers should be slightly compressed against each other, and the part retained in an extended position. The wound will heal readily, and in this process it will be found that the finger-nail will be drawn down more or less across the top of the finger, according to the amount of destruction the parts in the front of the finger have undergone by the previous sloughing. This drawing down of the finger-nail is, without any doubt, unsightly; but however unsightly it may be, or to whatever extent the nail may be drawn down, (and I have seen it in cases that have been left to themselves nearly flat on the end of the finger,) the extremity of the finger possesses a degree of sensibility, and the entire finger a degree of mobility that is not possessed by the extremity of the stump of a finger mutilated by amputation, and it is, therefore, of infinitely more service to

a patient in any circumstances of life, but especially so to the poor and labouring man.—*Lancet, July* 31, 1858, *p.* 112.

55.—*Dislocation of the First Phalanx of the Thumb.*—[In a case which occurred under his care at Guy's Hospital lately, Mr. Birkett sawed off the end of the protruding bone of the thumb, and closed the wound, which rapidly healed.]

The practice adopted in this instance, in treating the compound dislocation of the first phalanx of the thumb on the metacarpal bone, is that generally recommended,—namely, to saw off the head of the phalanx before reduction; and it is a proceeding which answers admirably. So far as we could judge, the man would have a good movable thumb, with all its powers of flexionand extension.—*Lancet, May* 22, 1858, *p.* 505.

56.—THE STARCH BANDAGE IN FRACTURE OF THE PATELLA.

By J. Edward O'Loughlin, Esq., Senior House Surgeon to the Royal Free Hospital.

Aliow me to call the attention of the profession, through the medium of 'The Lancet,' to the advantage of the starch bandage as employed by Mr. Cooke. It may seem superfluous in me to describe the mode of using a mechanical remedial measure which most practitioners are now doubtless conversant with; but as I know there are some who even still are sceptical as to the advantages to be derived from it, and are in a measure opposed to its adoption in the treatment of other fractures, and as I am certain that strict attention to minutiæ in the treatment of this particular one is the most certain means of obtaining a satisfactory result, I will briefly detail the mode adopted by me, under Mr. Cooke's direction, in patients suffering from this injury.

The patient on admission is placed upon the V shaped bed, and allowed to remain upon it for about twenty-four hours, untill all muscular irritability has ceased, means being taken at the same time to combat any unusual degree of inflammation which may possibly ensue. At the end of this time the fragments are drawn into contact as closely as possible, and retained there by the hands of an assistant, while the figure-of-eight bandage is applied tightly round the joint; some cotton wool is then placed over this, and the whole is invested by two pieces of stout pasteboard, softened in warm water, one on the back, the other on the front of the joint, each being about ten inches in length, that on the anterior having a piece cut out of its centre so as to embrace the patella; it is then invested by successive rolls of bandage, imbued with thick starch, which when dry forms a solid and unyielding encasement; the leg and foot are then bandaged evenly to

prevent œdema, and the patient is allowed to get about, and indeed may with safety be discharged from the hospital.

The result in two cases recently under Mr. Cooke's care in this hospital, and seen by your reporter, admirably illustrates the superiority of this plan. In one, a very oblique and much displaced fracture, there is to all appearance perfect bony union; in the other it is ligamentous, but a scarcely appreciable separation existed between the fragments, and this separation was entirely owing to the patient having unconsciously flexed the joint a little while asleep, and before the starch had become quite dry; the man, nevertheless, walked a mile to the hospital four weeks after the receipt of the injury, showing a very slight degree of lameness, and is now following his usual employment —that of a porter.

I am not aware that this method of treating fracture of the patella has been employed before, or even recommended by any of the systematic writers upon surgery, Professor Erichsen, indeed, in his admirable work on the 'Science and Art of Surgery,' seems to approve of the employment of a gutta-percha knee-cap; but, as I think there is nothing new under the sun, I do not wish to advocate for this plan of Mr. Cooke's newness or originality; of its utility I am fully convinced, and this practical fact must be my only apology for bringing the subject before your readers and trespassing thus far upon your space.

I may state, in conclusion, that in cases of chronic affections of the knee-joint, where perfect rest is absolutely necessary to ensure a successful issue, and where the patient is harrassed by those painful startings of the limb so common in articular disease, the starch bandage has been found eminently useful by Mr. Cooke.—*Lancet, June 12, 1858, p. 593.*

57.—*Spina Bifida Successfully Treated by Ligature and Puncture.* By Dr. J. G. Wilson, Fellow of the Faculty of Physicians and Surgeons, Physician to the Glasgow Lying-in-Hospital and Dispensary, &c.—[The following case occurred in the practice of the father of the writer, and is extracted from his case book:]

"About the middle of July last [year not stated], a male infant was brought to me a few days after birth with spina bifida over the lumbar region. The tumour was about the size of a small orange, and rose by a neck nearly an inch in diameter from the middle of the lumbar vertebra. It was distinctly fluctuating, irregular, and nodulated on the surface, and covered by thin, delicate, and transparent membrane. The child appeared to suffer much pain and uneasiness when pressure was applied to the tumour, and required to be constantly laid on its sides or abdomen. The power of voluntary motion in the lower limbs was little if at all impaired.

"What I considered a favourable circumstance in this case was, that the pedicle or neck of the tumour was covered with the ordinary integ-

ument; and this led me to attempt its removal by ligature after consulting with some of my medical friends. A ligature was applied not very tightly at first, and a new one put on every day. The tumour enlarged considerably, and it was frequently punctured with a fine needle. A large quantity of clear serous fluid exuded from the punctures, and it was not till the fourteenth day after the first application of the ligature that the sac began to shrink and shrivel up. The membranous covering became reddish, and ultimately black, and came away on the eighteenth day after application of the first ligature, leaving a raw tender surface about a quarter of an inch in extent. This small sore, by the use of simple water-dressing, combined with pressure, gradually healed, and a firm cicatrix was formed in the space of three weeks. Before the closure of this sore a slight fissure or defect in the spinal canal through which the tumour protruded was distinctly felt. The infant enjoyed excellent health during the whole time. It complained a little each time the ligature was tightened, and appeared, on the whole, less troublesome than formerly. The child was brought to me three months afterwards for vaccination, and was in a healthy, thriving condition, with the back perfectly sound."—*Med. Times and Gazette, October* 9, 1858, *p.* 371.

58.—*Flat Foot.*—The tendons which require division in severe cases of flat foot are those of the peronei and the extensor communis digitorum. "In congenital cases," observes Mr. Tamplin, "as far as my observation goes, the measure is invariably necessary, although the deformity may be slight, and the foot is easily brought into and held in position." The moment the feet are released from the instrument, the deformity returns, even after a period of twelve to eighteen months. But subsequent division of the peronei and the common extensor of the toes is speedily followed by a cure of the deformity, and removal of all tendency to contraction.—*British Med. Journal, May* 29, 1858, *p.* 429.

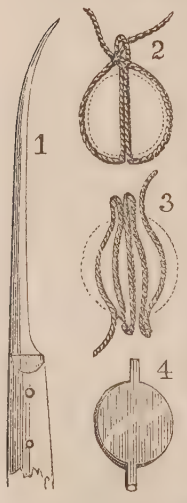
ORGANS OF CIRCULATION.

59.—SUBCUTANEOUS LIGATURE OF EXTENSIVE NÆVI MATERNI.

Under the care of J. Wood, Esq., King's College Hospital.

The subject of this case, a female infant, aged 14 months, has been under observation during the last two months. Various parts of the body, chiefly the head, neck, and right leg are affected, and present every variety of gradation from the superficial, raised, nodulated tumour, to the purely subcutaneous nævus, in which the true skin is

entirely unaffected. On the right parotid, a little below, and in front of the ear, is a tolerably defined, entirely subcutaneous tumour, increasing steadily, and somewhat rapidly of late, and swelling out largely when the child cries. On the back and side of the neck on the same side are two other tumours elongated transversely, and showing on the surface a greater implication of the true skin in the malformation. On the same side of the head and temple the skin is thin, translucent, and drier than natural, as if from the want of the sebaceous secretion, and it is traversed by numerous enlarged veins and capillaries. This condition reaches, upon the upper eyelid, that of the true nævoid tumour, enlarging during lacrymation. On the right buttock, and extending down the thigh, is an irregularly-shaped, raised, nodulated, red, nævoid excrescence, of the usual well-known appearance. A less degree of this condition affects also the labia pudendi and nymphæ. On the face and neck it is very desirable, if the skin be little implicated, to constrict the malformed tissue without loss of skin, and with as small a permanent cicatrix as possible. To attain this end, Mr. Wood has devised and practised with uniform success on several cases during the past year, the following subcutaneous knot. Its explanation will be best understood by reference to the accompanying diagram. A strong needle (fig. 1), with a short open curve, and mounted on a handle, with its flat surface in the plane of the curve, and a shoulder on the concave side only, to facilitate the raising of the point through the skin, is armed with a single piece of strong, well waxed and greased ligature thread. This is the only apparatus required. The needle is first passed close under the skin around one-half of the base of the tumour, as far as the opposite end of its diameter or pole, where the point is pushed through the skin. One end of the thread is then disengaged and left, and the needle, still bearing the other end, withdrawn. Then the tumour being well pinched up from the subjacent structures by the finger and thumb of the left hand, the needle is again passed through the first opening, under and across the base of the tumour, and its point protruded a second time at the opposite puncture. This time a loop of the ligature is left behind, when the needle is withdrawn. Still bearing one end of the thread, the needle is now passed round the remaining half of the circumference of the tumour, close to the skin, and through the openings previously made. The end of the thread is now entirely disengaged, and the needle withdrawn. We have now the two free ends of the string and a median loop protruding from the opening last made, *i.e.*, that opposite to the point of entrance of the needle (fig. 2). Each



of the ends is then passed through the loop in opposite directions, so as to cross within it exactly in the same way as in the ordinary "clove-hitch." This prevents the loop receding as the string is tightened. This being done, the ends may be tied in a bunch, or loop-knot. so as to be readily braced up, and re-tied from time to time, as the tumour shrinks in the process of cure. The skin is slightly puckered between the two punctures on tightening the ligature. No part of the latter is seen except the final tie, as it sinks entirely out of sight at the point of the first puncture. One or two drops of blood escaped during the operation. Two small sloughs usually form in the track of the ligature, and easily escape on the final withdrawal of the latter, which can usually be accomplished by traction, at the end of eight or ten days. The isolated portions of the tumour seem to shrink, and become consolidated into fibrous tissue, the vascular connexion with the superjacent skin being insufficient to keep up the nævoid dilatation of the vessels. Some months ago the strong nitric acid had been applied to the nævi on the buttocks in the above case. This, though effectual in destroying the growths, had caused such a painful, slowly-healing sore, that the parents strongly objected to its reapplication. Accordingly, about a month ago, Mr. Wood operated upon a portion of it in the following manner:—Worsted threads, soaked in a strong iodine paint, were passed, by means of a blunt needle, superficially through the nævoid skin, by means of two opposing punctures, as in the preceding operation, but so as to traverse the growth in the lines of longitude (as seen in fig. 3), and left in loops at each puncture. A flat piece of wood, of the size and shape of the part operated on (fig. 4), covered with sticking plaster, and furnished with two opposing projecting points, was then placed upon the nævoid surface. Over the projecting points the loops were passed, and the threads tightened and tied, so as to exercise a considerable amount of pressure, and the whole covered with sticking plaster, pad, and bandage. Complete obliteration of the nævus at the part operated on was the result in about a fortnight or three weeks, with trifling pain to the little sufferer.—*Med. Times and Gazette, July* 31, 1858, *p.* 113.

60.—*Subcutaneous Nævus over the Anterior Fontanelle.*—We saw Mr. Erichsen treat a congenital nævus over the anterior fontanelle of an infant twin, a few weeks old, at University College Hospital on the 28th April, in the following manner:—A puncture was made through the scalp on one side of the nævus, and a blunt needle-eyed probe armed with a ligature was passed through the base of the nævus to the opposite side, which emerged through another opening made with a knife. This was repeated at right angles to the first thread, and the four double cords were firmly tied, through fissures made in the skin, around the tumour, and complete strangulation effected. No cerebral symptom was manifested during the process.

In such cases as these Mr. Erichsen does not use needles in the usual way, because the membranes of the brain might be punctured, and death might ensue. But when performed in the manner described, there is not the same risk, and in about half a dozen cases thus treated by him no accident or untoward symptom occurred, and the nævus was got rid of. When a nævus is situated over a bone, of course the sharp needles may be employed, as is commonly witnessed.

All the numerous and varied methods employed for the removal of nævi are considered at length in most surgical works, but scarcely one refers to a nævus over the anterior fontanelle, which common prudence would teach us requires to be managed differently from nævi in ordinary and less important situations.—*Lancet, May* 22, 1858, *p.* 505.

61.—*Injection of Perchloride of Iron in Varicose Veins.*—At University College Hospital, the plan generally resorted to in the treatment of varicose veins is, the passage of pins beneath the vessels, and twisted threads over the pins, which effectually produces obliteration. We saw another method put into practice recently by Mr. Henry Thompson—that of injecting the perchloride of iron by means of a small syringe and minute trocar and canula, into the veins themselves. This generally produces immediate coagulation of the blood, and such was the case in the present instance, the patient being a female about forty years of age. The perchloride was injected in four different places, and the coagulum was most distinctly felt beneath the skin. There was also one pin used, but as the varix was more generally diffused than usual, and therefore not so easy to treat by the pins, the injection was preferred. With the exception of severe pain being complained of in the groin of the affected leg, the left, some two or three days after the operation, she has gone on pretty well, and the veins are obliterated. This mode of operation has been resorted to once before in this hospital, on another patient, unsuccessfully.—*Lancet, Oct.* 2, 1858, *p.* 351.

ORGANS OF RESPIRATION.

62.—ON FOREIGN BODIES IN THE TRACHEA-TRACHEOTOMY.

By John Adams, Esq., Surgeon to the London Hospital.

[The author gives two interesting cases in both of which tracheotomy was performed for the relief of urgent dyspnœa. In the first case, in which the dyspnœa was paroxysmal, an ossified arytenoid cartilage passed up into the patient's mouth in a few days, and the case was thereby cured. In the second case there was a severe harsh cough, loss of voice, great difficulty in swallowing, and great emaciation in consequence; the dyspnœa becoming more urgent, and the breathing

stridulous, tracheotomy was performed. She died with hectic symptoms, nine weeks after the operation, and an irregular bit of bone about the size of a large pea was found in the anterior wall of the the œsophagus, a sharp projection having worked its way also into the larynx: both trachea and œsophagus were much diseased. Had the existence of a foreign body been suspected, its removal would have been attempted. Speaking of the lodgment of foreign bodies in the trachea, the author observes:]

An interesting circumstance connected with this subject is this—that foreign bodies which readily enter through the rima, seldom escape by the same opening—of course this is not an invariable rule—but the fact is, nevertheless, as I have stated, and admits of the following explanation, namely, that in inspiration, and when the foreign body is drawn into the larnyx, the rima is dilated; but, on the contrary, during expiration, and especially during the convulsive efforts to expel it, the rima is contracted to its utmost possible limits. The performance of the operation becomes therefore, doubly important, for it not only provides an additional and larger aperture for the escape of the foreign body, but it renders quiescent the irritable glottis, and allows some bodies to roll through it, as in the case of coins, &c., the escape of which, before the additional opening made by the surgeon, was invariably resisted.

In operating in cases of foreign bodies, it seems to me that something more is required than the simple opening of the trachea; for it often happens that the foreign body does not escape at the time of the operation, and it becomes requisite to maintain the patency of the tracheal opening. It is quite obvious that the tracheal tube is not well adapted to such a purpose, and under such circumstances. Now it has suggested itself to me to advise—for I have had no opportunity of putting the practice into operation—after the opening has been made into the trachea, the employment and insertion of a strong metallic wire speculum, like those invented by M. Luer, of Paris, and which are so frequently used in operations on the eye. They could easily be so modified and constructed as not in any way to interfere with the exit of foreign bodies, the escape of which they are intended to assist; and even in cases of croup they could in no way interfere with the removal of pieces of false membrane which are constantly flapping against the orifice of the tube, and thus prevent the free ingress and egress of the air. Another advantage to be gained by the speculum is that it is not likely to become a cause of the extension of the inflammation along the tracheal mucous membrane, as must be the case, more or less, with the tubes which remain in contact with this delicate structure. The only disadvantage which can possibly attach to their employment in preference to the tube is, that the passage of blood into the trachea cannot be prevented by them; and hence it

would be the more necessary to see that all hemorrhage was arrested before the opening was made into the trachea.—*Med. Times and Gazette, July* 3, 1858, *p.* 3.

63.—*Nasal Polypus Removed by a new Forceps.*—A young girl, aged about sixteen years, had a nasal polypus of the right side removed by Mr. GANT, on the 9th ult., at the Royal Free Hospital, by an instrument which he has contrived, and which presented some points of simplicity and interest about it. The girl had one polypus removed about three weeks ago by the same surgeon. She had been a sufferer for a long time. None of her relatives, so far as she knew, had ever been subject to nasal polypi. The base of the polypus was readily seized with the blades of the forceps, and separated with ease. No pain attended the operation, and but very little hemorrhage ensued. We would recommend these forceps to the notice of surgeons.

Mr. Gant afterwards stated, that having somewhat frequently had occasion to remove nasal polypi, he had experienced some difficulty, and even danger, in doing so with the ordinary serrated forceps. It was an unsurgical proceeding to attempt to detach a polypus from the nasal fossa by twisting its peduncle. Not to mention the acute pain of such an operation, it is also ineffectual. If the polypus be soft, as usual, it is apt to come away piecemeal. and require more than one operation for its removal, or should the polypus be harder than usual, we may accidentally bring away a portion of either spongy bone between which it is more commonly attached, or we may, perchance, injure the delicate septum narium. Surrounded, indeed, as a nasal polypus is by delicate bony structures, we can scarcely venture to wrench it away from its osseous attachments without some risk of injury thereto. This misadventure is followed by "carious disintegration" of the exposed bone, accompanied by a fetid and persistent discharge.

To meet these difficulties, Mr. Gant has recently invented a pair of forceps, which *cut* and hold at the same time. One edge of either blade is finished off somewhat like that of an ordinary scissors; the other edge is broad and *rasped.* This combination of scissors and rasped forceps is a modification of the grape or flower scissors of the conservatories. The danger of hemorrhage, on which so much stress is laid in the books, as the main reason for twisting rather than cutting a nasal polypus, would seem to be an error. Very little hemorrhage attended the operation we witnessed. It would seem that the forceps in question sufficiently compresses the bloodvessels to arrest hemorrhage, and Mr. Gant particularly called attention to the fact, that operations with his instrument "were as bloodless as they were painless." Nor in his experience did nasal polypi so removed return.

The new forceps were made by Messrs. Weiss, and may perhaps prove applicable for the removal of polypi in other situations besides those which grow in the nasal fossæ.—*Lancet, Sep.* 4, 1858, *p.* 257.

ALIMENTARY CANAL.

64.—AN OPERATION FOR THE RADICAL CURE OF INGUINAL HERNIA.

[During the last few years the operation for the cure of inguinal hernia, as performed by Wutzer of Bonn, has been tried with success in this country. A very able article on this subject will be found at p. 188 of our last volume, and others at pp. 126 and 128 of vol. xxxv.]

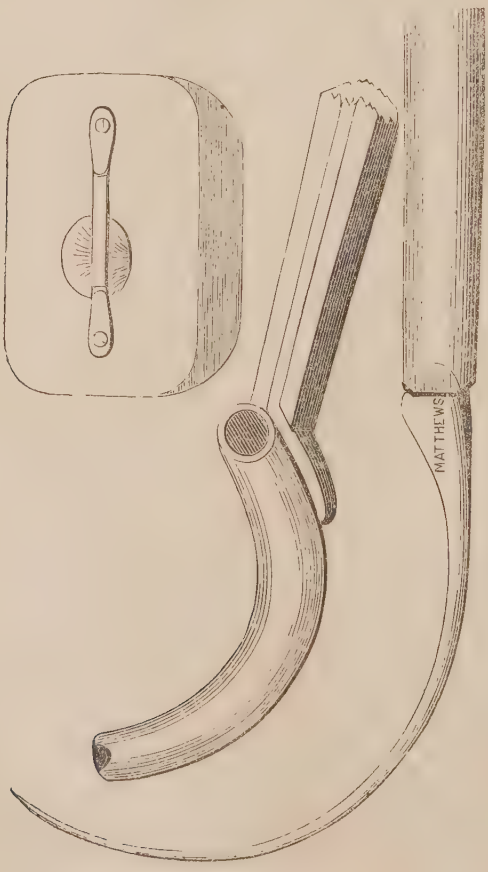
More recently, a new method of curing hernia radically, by a simple process, has been invented by Mr. Wood, of King's College Hospital; and from what we have seen of it, together with the state of the parts in the patient successfully submitted to it. we are inclined to think more favourably of it than of any other. The main features of this operation consist, 1st, in its being conducted subcutaneously, insuring a more ready and less painful healing; 2nd, in the introduction into the canal of the two layers of superficial and intercolumnar fasciæ, which are unusually abundant and strong under the condition of hernia, and which are made to cohere into a solid plug by adhesion of their opposed surfaces, made raw by the subcutaneous separation from the skin, and are also supported and kept in position in the canal by the new adhesions contracted below by the skin from which they were separated; 3rd, in the drawing together and close union of the sides of the enlarged external ring by the lateral traction of the ligature upon them, caused by its passing through the same opening in the skin and in the compress upon it, and tying them down by consequent permanent adhesion to the invaginated plug of fasciæ behind them; and 4th, in the firm compression made upon the part during the formation of the adhesions, and their consequent greater extent and firmness, by the traction of the ligature upon the boxwood compress.

Mr. Wood is of opinion that the distinct evidence as to the position of the hernial sac of peritoneum and of the cord through the opening in the skin, and the great certainty that the feel of the tube gives that its position at the extremity is close behind the aponeurosis of the external oblique, and has no intervening structure necessary to be avoided between it and the surface, remove almost entirely the danger of puncturing the sac in this operation; while he supposes that the succeeding pressure may operate after a while in producing adhesions of the opposed surfaces of the doubled-up sac. The operation leaves no dimple or deformity whatever; the cicatrices are very small and slight, and after a time will become nearly imperceptible.

John C—, aged twenty-five, a printer, applied at the hospital with a direct inguinal hernia on the right side, to which he had been subject eighteen months, with frequent obstruction and constipation of the bowels, and after meals had suffered from great pain and distress in the part. He has tried seven trusses, none of which had power to

retain the bowel. The last he tried produced such irritation as to give rise to a series of abscesses in the groin, which was the direct cause of his application. The abscesses being healed, and the patient disposed to submit to an operation for permanent cure, the following was performed:—

On examination, he was found to have a hernia projecting into the scrotum, producing a tumour, which he said sometimes reached the size of his two fists. On reducing it, the external ring and the internal



opening was found to be enlarged, so as to admit the ends of three fingers, the margin being lax and loose. On the slightest cough or exertion, the bowel immediately dropped down into the scrotum.

Description of the Instruments.—The instruments used in this operation consist of, 1st, a tube two inches and a half long, mounted on a strong handle, about three inches and a half in length, curved in a circle of an inch and a half radius, and flattened into an oval at one end, and forming a linear aperture a quarter of an inch wide at the point: 2nd, a strong needle, having a corresponding curve, with a perforated point, projecting a full inch beyond the end of the tube when passed through it, and mounted on a strong handle: 3rd, a box-wood pad or compress, two inches by one and a quarter, perforated by a hole at half an inch from one end, and crossed longitudinally by a bar of iron wire screwed on to the upper surface: 4th, a subcutaneous section knife, with a sharp point, a narrow blade, and an inch of cutting edge. The engraving represents the three first-named instruments.

Operation.—The patient being laid on his back, with the legs a little drawn up, and the hernia returned, an incision, about three-eighths of an inch long, was made through the skin only, over the cord, about an inch and a half below the external ring, with the subcutaneous knife, which was then carried close under the skin, so as to separate a circle of the superficial fascia around the opening of two inches in diameter. The detached fascia was pushed up into the inguinal canal by means of the curved tube, the end being placed through the opening in the skin. The extremity of the tube was then carried behind and close to Poupart's ligament, or the external pillar, to the extent of an inch and a half from the pubic spine. It was then felt, by depressing the handle, to raise the external pillar upon the extremity. The needle, carrying the thickest silk ligature, was then protruded through the tube, and pushed through the external pillar and the skin, the latter being previously drawn considerably downwards and outwards. The needle was then withdrawn, leaving one end of the ligature on the surface. The end of the tube was next shifted upwards and inwards, and made to protrude behind the internal pillar, as far as possible from its margin. Through this the needle was then passed, and the skin moved upwards and inwards till the point appeared at the opening previously made. The ligature was then freed, and the needle withdrawn, the tube being still held firmly in its position. The ends of the ligature were next passed through the hole in the boxwood compress, one on each side of the wire bar, over which they were then drawn close and tied firmly, so as to retain the pad close down to the end of the tube in the canal, which was then withdrawn. It will thus be seen that the first passing of the needle pierces not only through the external pillar of the external ring, but through the origin of the internal oblique and cremaster muscles, from Poupart's ligament behind it; and at the

second passing, it goes through, not only the internal pillar, but also the conjoined tendon of the internal oblique and transversalis muscles, which is placed behind it, so that the sides of the inguinal canal are drawn together from end to end by the ligature. The wound in the skin of the scrotum was drawn firmly together by plaster, a fold of linen placed upon it, and the whole secured by a spica bandage; the patient being ordered to remain in bed, and to use no exertion whatever.

The bandage was removed on the third day, when the subcutaneous puncture was found completely healed by the first intention. The compressed ligatures were retained till the fifth day, some œdema and suppuration having by this time appeared around them, with considerable soreness and pain in the groin. The opening for the ligature looked red, healthy, and suppurating. It was dressed with wet lint and oil-silk, a large compress, and spica bandage. In a fortnight it was completely healed. No irritation nor swelling of the testicle occurred in the course of treatment, nor any symptom of peritonitis.

At present, three weeks after the operation, the external ring is felt by the finger, pushed up beside the cord, to be completely blocked up by a broad band of fascia passing across it and up along the canal, with the cord passing by the lower part. The sides of the canal are felt adherent and consolidated. There is no *ballottement* whatever felt on coughing; the groin of the side operated upon being more firm and resistant, in fact, than the opposite, which has always been a little weak. The patient was ordered to wear a truss for some months, to consolidate the part and protect the newly-formed tissues. The skin is firmly adherent to the subjacent structures at the point of the punctures and subcutaneous separation. He has since undergone a severe test as to the efficacy of the cure in an attack of bronchitis, from which he has completely recovered, without in the least affecting the site of the hernia.—*Lancet, May* 29, 1858, *p.* 530.

ORGANS OF URINE AND GENERATION.

65.—ON THE MEDICAL TREATMENT AND DIAGNOSIS OF STONE IN THE BLADDER.

By Dr. Arthur Hill Hassall, F.L.S., Physician to the Royal Free Hospital.

[Previously to the actual formation of stone, there is invariably a persistent condition of the urine going on for months or years, obvious to the unaided sight, and which ought to attract the attention of both patient and physician, though it is too frequently allowed to go on unchecked, till a calculus is formed, and the patient is handed over to the surgeon,—the physician usually abandoning the treatment as a task too difficult.]

I contend that the physician ought to take a prominent position in the treatment of stone. The conditions of the urine leading to calculus are chemical, physiological, and pathological, for all which reasons medical treatment is required.

Further, the medical treatment pursued should not be limited to the period of the actual presence of a stone; for then, although more can be accomplished medically than is usually supposed, the best opportunity for medical treatment has passed. In fact, the treatment should be anticipative, and preventive, and not merely palliative or curative.

That is, every person whose urine contains an habitual and persistent deposit should seek medical advice, with a view to the correction of that non-natural condition of urine which predisposes to the formation of calculus.

The particular nature of the treatment demanded is determined, of course, by the nature and composition of the deposit, and need not here be described; that for persistent deposits of uric acid the urates and cystine has already been fully detailed in my Lectures, published in 'The Lancet' for the first half of the current year. (See Retrospect, Vol. 37, pp. 110–121, and the present vol., pp. 142–158.) We would in this place limit the observations we have to make to some few general particulars relating to the treatment of stone itself when actually formed, and first we would treat of solvent and especially alkaline remedies.

These remedies, as ordinarily employed, are not exhibited to anything like the extent to which they ought to be given. As usually prescribed, they are administered in doses of from ten, twenty, to at the most thirty grains two or three times a-day.

The fact has been forced particularly upon my attention by the analysis of a quack remedy, called "*constitution water*," and which has acquired some celebrity in the treatment of some forms of stone. It consists of impure carbonate of potash, and the dose is the eighth part of a bottle, about the size of a wine bottle, four doses to be taken daily, equal to about 184 grains, or upwards of three drachms of carbonate of potash, a quantity which in some cases may be greatly exceeded with advantage.

Now, the doses of the other alkalies, alkaline carbonates, citrates, acetates, and tartrates, and indeed of nearly all the solvent remedies employed in the treatment of stone, may be increased in like proportion, and with similar advantage.

Another very important deficiency in the present mode of treating stone is, that the remedies resorted to, being usually administered by the mouth, are conveyed to the stone in the bladder by the circuitous route of the circulation; in the blood, of course these remedies become diluted, so that they reach the bladder in a greatly weakened form. Again, administered freely, alkaline remedies are apt to disorder the general health, modifying as they do so materially the vital

and physical properties of the blood, as well as of the various fluids secreted from it.

Now these disadvantages may be obviated by employing the solvent remedies used in the form of *injection;* these should not only be strong and frequently repeated, but they should be retained in the bladder as long as possible, or should be injected in a continuous stream.

I am of course aware that injections have been tried occasionally in the treatment of stone, with more or less success; but they are not resorted to nearly so frequently as they ought to be, nor have they been employed in the manner most conducive to success.

I would not be understood as recommending the use of vesical injections to the exclusion of constitutional treatment; this of course should be persevered in as well.

Again, in some cases medical may be combined with surgical treatment: that is, the stone having been reduced to fragments by the lithotrite, the solution of the fragments should be attempted by the employment of suitable remedies, both through the medium of the constitution and locally by injection.

The conditions of the urine tending to the production of stone which call for treatment are those in which that fluid contains persistent deposits of uric acid, urates, oxalate of lime, cystine, and the earthy phosphates. The calculi ordinarily met with are composed entirely or in part of one or other of these compounds; those composed of uric oxide, silicic acid, and carbonate of lime, are of such rare occurrence that it is scarcely necessary to take them into consideration at all.

The following figures show the relative frequency of the occurrence of the calculi most commonly met with:—

Of 1000 calculi, the composition of which has been ascertained, 372 consisted of *uric acid*, alone, or mixed with small quantities of the urates and oxalate or phosphate of lime; 253 of the *earthy phosphates*, chiefly fusible calculi; 233 of varying layers of *uric acid*, *oxalate of lime*, and *earthy phosphates;* 142, of *oxalate of lime*.

The urinary deposits and calculi most readily acted upon by solvent remedies are, the several earthy phosphates and cystine; and therefore it is in these cases especially that the greatest amount of success is to anticipated from the treatment here recommended.

I have now a few remarks to make on the subject of the *diagnosis* of calculi.

In general but few attempts are made by the surgeon to determine, either during the existence of a calculus or prior to an operation, the chemical composition of the calculus, and yet the microscope affords a ready and satisfactory means by which this object may generally be accomplished. Thus the composition of the stone may frequently be determined with considerable accuracy by ascertaining by means of the microscope the ordinary deposit or deposits occurring in several consecutive samples of the same urine. The determination of the

composition of the calculus is not, indeed, often a matter of much importance to the surgeon who is about to remove the stone by operation; but to the physician proposing to treat the case medically it is a point of the utmost moment, because it is only upon this knowledge that the proper and exact line of treatment to be pursued can be based. There is yet another way in which the composition of calculi may be determined—namely, by a chemical examination of the fragments usually passed after the operation of crushing by the lithotrite.

Berzelius, in his "Handbook," makes these remarks respecting the solution of vesical calculi:—"The attempts which have been made to dissolve concretions in the bladder have not succeeded as we might have expected. However, I am perfectly convinced that they have not been often enough reported to enable us to find out and remedy those obstacles which we are unable to foresee, and which frequently increase the difficulties of their application."

An article on the same subject in the 'British Foreign and Quarterly Review' contains these words:—"So much has already been done as to hold out every inducement to perseverance, and perseverance must of necessity be crowned with success in a certain proportion of cases."—*Lancet, Aug.* 21, 1858, *p.* 197.

66.—*Inversion of the Body for the Relief of the Symptoms produced by the Passage of a Renal Calculus along the Ureter.*—Professor Simpson exhibited at the meeting of the Medico-Chirurgical Society of Edinburgh, a small oblong renal calculus, from a patient who had passed them at different times, and always suffered terribly during their transit from the kidney to the bladder. This patient had been now twice relieved of the agonising symptoms accompanying the passage of the calculus by inversion of the body. Professor Simpson had subjected her to this treatment in consequence of his belief that the passing calculus, falling down into, and becoming impacted in the ureter, acted at its point of arrestment as a pea-valve, and by its accumulating the urine above, or in the pelvis of the kidney and higher portion of the ureter, led to the accompanying distress by the morbid distension of these portions of the urinary ducts. When the body was inverted, and the affected side manipulated, the calculus probably fell backwards, and consequently upwards, by its own gravity. At all events, whatever be the explanation, the practice in this and in one other case had immediately relieved the patient. He had seen partial relief from changed position in one case also of gall-stones. Position was a more important therapeutical agent than was generally supposed, not only in medicine, but also in surgery and therapeutics.—*Edinburgh Medical Journal, July,* 1858, *p.* 76.

67.—ON THE TREATMENT OF OBSTINATE STRICTURE BY EXTERNAL INCISION.

By James Syme, Esq., Professor of Clinical Surgery in the University of Edinburgh.

[There is no doubt that dilatation when practicable is the best means of treating strictures, but there are cases in which no permanent advantage can be gained in this way, either from the extreme tightness and unyielding nature of the stricture, or from the irritability of the parts, or from the great tendency to recontraction. Professor Syme then proceeds to relate the case of a military man who had suffered from stricture for many years, the stricture could be dilated to the full size, but invariably contracted again. Division of the stricture was ultimately resorted to, twelve months after which operation, an instrument of moderate size could be readily passed into the bladder. In the next case, Mr. Syme remarks that perineal abscess has, in the first instance, no communication with the urethra, and that the fistula or passage for the urine is of secondary formation, through giving way of the septum between the abscess and urinary passage.]

The object which I have chiefly in view at the present is to explain a source of danger attending the operation of division that did not originally occur to me, and of which indeed I only lately became fully aware. In performing an operation upon the living body we are not in the condition of a blacksmith or carpenter, who understands precisely the qualities of the materials upon which he works, and can depend on their being always the same. The varieties of human constitution must always expose our proceedings to a degree of uncertainty, and render even the slightest liberties possibly productive of the most serious consequences; so that the extraction of a tooth, the opening of a vein, or the removal of a small tumour, has been known to prove fatal. Then it must be admitted that the most experienced, careful, and skilful operator may commit mistakes; and I am sure that there is no one of the gentlemen present who can look back on his practice and say he has never been guilty of an error. But, in estimating the value of any surgical procedure, we must beware of confounding the effect properly belonging to it with those that result from faults on the part of either the patient or the surgeon. Cases of the latter kind can never promote the improvement of our profession, or serve any higher object than supplying food for the morbid craving of ignorance and malevolence. It is therefore to the former that I wish to direct your attention.

In originally proposing the operation, I proceeded under the impression that the only sources of danger were hemorrhage and extravasation of urine, and that if the incision were made in the

middle line, there could be no possibility of injuring an arterial branch, while the introduction of a catheter would insure a safe exit for the urine. The procedure might thus be deemed absolutely safe. I have accordingly never seen extravasation beyond a little infiltration of the scrotum ; and as to the hemorrhage, I seldom find it amount to more than one or two teaspoonfuls at the time of the operation. In young, plethoric patients, there is sometimes, in the course of some hours afterwards, a farther flow, even to the extent several ounces, from the corpus spongiosum, but this may be arrested by the slightest pressure of lint introduced between the edges of the wound. The only serious case of hemorrhage I ever met with was in the case of a gentleman of about sixty years of age, from the west of England. About a week after the operation, when all seemed right, he began to bleed from the urethra. I then introduced the catheter with good effect for a few days, when the hemorrhage returned, and proved so serious that I opened the wound, and tied an arterial branch, with the effect of finally putting a stop to the bleeding, and the patient is now in good health. What this vessel was, or where it came from I do not know, but I am quite sure that it had no business there, in accordance with the ordinary structure.

I advanced to between eighty and ninety cases without a single fatal result, and to show the value of statistics, may remark, that if I had stopped here it would have been perfectly legitimate for me to maintain that the procedure was entirely free from risk. It is true that alarming symptoms were by no means rare, since every third or fourth patient suffered from rigors, vomiting, delirium, or suppression of urine, but as they passed off in the course of twelve or twenty-four hours, I had come to regard them as rather curious than alarming, and as merely the result of some harmless commotion of the nervous system. At length a very distressing case gave me a different view of the subject. The patient suffered nothing from the operation ; had the catheter taken out on the second day; was quite well on the third, and on the fourth was lying dressed upon a sofa in the best of spirits. In the afternoon of that day, during the act of micturition, he felt an acute pain in the perineum, and in walking from one room to another, fell on the passage so as to graze his forehead and the outer side of his knee ; at the same time he had a violent rigor, followed by quick pulse and great pain in the injured parts. As the urine passed freely and entirely by the urethra, I expected that these symptoms would soon subside, but they continued and went on to suppuration of the knee, with destruction of the eyeball, and terminated fatally at the end of several weeks. I felt quite unable to account for this case until the following one gave me additional light on the subject:— The patient suffered nothing from the operation, which was of the simplest kind, and as he did not complain at all of the catheter, was allowed to retain it three days. When it was then removed, he expressed perfect comfort, and

afterwards wrote to his friends at home the most satisfactory accounts of his progress. At three o'clock of the afternoon he passed urine, and felt some pain in doing so, which was attended with a slight discharge of blood. Immediately afterwards he had a violent rigor, followed by delirium and insensibility. There was no pulse, no secretion of urine, and he died the next day. On examination there was not the slightest trace of urinary extravasation, or any other sign of local mischief; but the kidneys were gorged with blood to an extreme degree; and it was plain that death had resulted from a sudden shock to the nervous system.

In endeavouring to account for this effect, I recollected that the symptoms of disturbance were always connected with micturition after withdrawal of the catheter; and I also recollected that in all my practice, private as well as public, I had never, even in a single instance, encountered any bad effect of the kind in question, when there was a fistula in perineo. It, therefore, occurred to me, that the cause of disorder must proceed from the action of urine upon a raw surface produced by tearing of the imperfectly-united wound in the urethra. Under this impression, I thought that safety might be insured by preventing the wound from healing through frequently introducing the finger, so as to touch the catheter, and treated a number of cases on this principle with perfect success. But the tendency to union between the cut edges of the urethra is so strong that I sometimes found it necessary to use a little force in exposing the instrument; and upon two occasions of my doing so, the same deadly symptoms supervened that it was my object to prevent. I therefore resolved to obviate the danger more effectually by introducing a short catheter by the wound in the perineum, and my principal object at present is to recommend this plan for your adoption. The instrument you see is about nine inches in length, slightly curved in opposite directions at its extremities, and having a couple of rings just behind the anterior bend for securing it in its place. In addition to the great advantage of affording perfect security, this catheter is much less irksome to the patient than the one hitherto in use, and cannot like it produce any bad effect by pressing upon the coats of a contracted bladder. It may be supposed that from not distending the urethra at the seat of stricture there may be inconvenience from contraction; and to obviate this, I used in some cases this flexible bougie, having a loop of thread at its extremity, which being protruded from the wound, allowed the catheter to slip through it, and so distend the canal. But this complication, I am inclined to think, is quite unnecessary, as the absence of it has not led to any practical inconvenience.

It has been frequently and very incorrectly said that I maintain the possibility of passing instruments at the first attempt in every case of stricture. I never did so, although it is true that during

thirty years' practice I have never found it necessary, either in public or in private, to puncture the bladder on account of retention of urine from stricture; but in many cases I have required repeated and careful trials before being able to pass a bougie through the contracted part, my maxim always being, that if the urine gets out, an instrument through time, care, and patience may be got in. If, indeed, the canal has become obliterated by the effect of external injury, the state of things is different, and then the ordinary procedure is no longer applicable. I communicated to the Medical and Chirurgical Society of London a mode of overcoming this difficulty, which seems much more eligible than the old plan of cutting on the point of an instrument at the seat of obstruction. It was to pass a curved director, with its groove upon the concave side, through the fistulous opening into the bladder, which may always be very easily done, and then to push down upon it the instrument employed for guiding the incision in dividing strictures, so that the narrow portion of it is forced through the obstructing texture exactly in the proper course of the urethra, and thus conducts the knife with certainty in the proper direction. I had lately an opportunity of learning that one of the two cases mentioned in that communication remains perfectly sound and well. The young man now before you affords another example of this plan proving successful. He came from Halifax, in Yorkshire, on account of a fistula in perineo, through which every drop of his urine had passed for five months, since the receipt of an injury by falling astride on a beam of wood. On examination, I found the urethra completely obstructed, and therefore performed the operation just described, with the effect, in six weeks' time, of restoring him to his present state of comfort. He now passes his urine in a full stream entirely by the urethra, and is going home with the prospect, I trust, of enjoying good health.

In connexion with this subject, I may notice a curious case that was lately sent to me by a gentleman now present, Dr. Roberts, of St. Asaph. The patient was a gentleman of about thirty-seven years of age, who had suffered long and severely from stricture, with fistula in perineo. In passing a small metallic bougie, I felt a hard substance behind the contraction, and, from my recollection of a similar case, at once recognised it as a piece of bone. Without delay, the stricture was divided, and these four small bodies removed. The largest has the size and form of a pea, the others being smaller and of an irregular figure. The largest one distinctly shows the osseous characters, but the smaller ones require a microscope for their detection. Urinary concretions are frequently met with behind a stricture, but exfoliations are hardly to be looked for in this situation, and can be accounted for on the present occasion only by the patient having in childhood suffered from disease of the pelvic bones.—*Lancet, Aug.* 21, 1858, *p.* 191.

68.—*On Perineal Section in Contractile Stricture.* By Henry Smith, Esq.—A bad stricture will most surely re-contract in nearly every instance, after whatever treatment may have been adopted, if it be neglected—but of this I feel pretty sure that re-contraction takes place much more speedily and obstinately after violent measures, such as cutting, using caustic, or violent disruption, than after the slow and cautious dilatation which I employed in this case, and which should always be used in similar instances. I have great faith in potassa fusa in certain obstinate cases; but my experience of that agent makes me incline to the belief that if the patient neglects himself recontraction will occur more obstinately than when it has not been used. This, however, in itself is not a valid objection against its employment in proper cases, nor is the fact of re-contraction taking place, alone, an argument against perineal section. The great objections to this operation are that death does often occur, and that cutting is not necessary if an instrument can be passed through a stricture, and proper treatment be subsequently pursued. In order to show that by taking a number of cases the results of this operation are anything but favourable in the hands even of the most skilful, I may mention that there have been operated upon in King's College Hospital by Mr. Fergusson since 1849, thirteen cases of stricture according to the new method; out of these cases, three patients have died, and of the ten remaining about one-half only have been turned out in what may be termed a sound condition. I very strongly suspect that much about the same average of success would be found to follow this proceeding wherever performed, if the results could be ascertained as truthfully as in the cases referred to; but when we have evidence to prove that fatal cases are constantly happening, it becomes a mere mockery and farce for any one, whoever he may be, to talk about the safety and success of the operation, and every honest man will hurl the indignation of his mind against those surgeons who, knowing the real facts, plainly tell their unsuspecting patients that "there is no danger in it whatever."—*Med. Times and Gazette, Aug.* 21, 1858, *p.* 189.

69.—EXTERNAL DIVISION OF URETHRAL STRICTURES.

[A writer in the 'Medical Times and Gazette' lately visiting the Edinburgh Royal Infirmary, was desirous to ascertain the opinion of his colleagues as to Mr. Syme's operation for stricture, for this reason, that an operation is sure not to rise beyond its deserts in the locality of its birth, and during the life of its proposer. Mr. Spence, the senior surgeon, had several cases in his wards, in which he had had recourse to this operation, and spoke highly as to its general merits.]

Mr. Syme, over and over again in the course of clinical remarks, took occasion to avow his adherence to the old creed, that "dilatation is the proper treatment for strictures," and to urge that the knife

should be resorted to only when for one or other reason the bougie is inadmissible or unavailing. I was disappointed in not having an opportunity for seeing Mr. Syme perform the operation, being the more desirous to have done so, as he attaches much importance to making the section from behind forwards, whilst the usual London practice is to cut backwards, as in lithotomy. There can be no doubt but that the risk of cutting the deep perineal fascia is much greater by the latter method. Whether or not the preservation of its integrity is practically of much importance may, however, be open to some doubt. Two or three cases were brought before the class, in which the operation had been performed a few weeks or months ago. In these large instruments were introduced, to demonstrate the patency of the canal. The Professor stated that experience had taught him to be far more particular about the subsequent use of bougies than he had originally been. If they are disused, the stricture is very liable to relapse; and the patient should have this fact strongly impressed upon him, in order that he may not be led by the apparent completeness of the cure to entertain feelings of careless security. As to the danger indicated by the collapse, rigors, &c., which not unfrequently follow the operation, Mr. Syme also stated that he had been obliged to modify his estimate since the publication of his work. Although still holding them to be by far more alarming in appearance than in reality, yet the occurrence of fatal consequences in one or two instances had forced him to the conclusion that they were not always to be disregarded. He had noticed, he said, that cases in which perineal fistulæ had previously existed were very rarely followed by these symptoms, and, acting upon this observation, had adopted the practice of endeavouring to always keep the wound open. It was surprising how rapidly union often took place between the cut edges of the urethra. At first he had contented himself with simply tearing these adhesions away with the finger-nail, so as to freely expose the catheter; but latterly he had preferred to introduce a curved silver catheter into the bladder by the wound. It might be thought that, if this latter plan were adopted, there would be some risk that the divided stricture might not remain open, inasmuch as it would have no part of the instrument within it. To prevent such result, Mr. Syme has contrived a straight silver tube, through the open extremity of which passes a wire noose. This is passed through the penis, and in the perineal wound the wire loop is put over the other instrument. The two are thus connected, and the patency of the whole urethra is established. The Professor stated, however, that he thought the fears of closure of the stricture were to a great extent groundless, and said that he intended in future to trust to the catheter passed from the perineal wound.

In the course of his clinical address Mr. Syme mentioned the particulars of three fatal cases which had occurred in his practice. In none of these did any perineal fistulæ exist. It would seem, therefore,

that the cases which most imperatively demand this mode of relief, are the very ones in which the least risk of ill consequences is encountered.—*Med. Times and Gazette, Aug.* 14, 1858, *p.* 168.

70.—ON THE OPERATION OF OPENING THE URETHRA IN THE PERINEUM.

By Thomas Bryant, Esq., Surgeon to Guy's Hospital.

[After an interesting paper upon this much debated subject, with illustrative cases, the author arrives at the following conclusions:]

1. In uncomplicated retention of urine from organic stricture, the operation of opening the urethra in the perineum is not required, the more simple and safe one of puncturing the bladder through the rectum being preferable.

2. When complicated with extravasation of urine from any cause, it should be performed at once, and the stricture, when present, divided, if possible.

3. In laceration of the urethra from injury, when a catheter cannot be passed, the urethra should be opened.

4. And also when the above injury is associated with pelvic mischief.

5. Strictures are occasionally met with which are impermeable, and urethras which are obliterated.

6. That in cases of organic stricture, when the passage of a catheter is possible and not difficult; where it does not produce either any injurious or painful constitutional or local disturbance, and where, after dilatation of the stricture, an occasional passage only of the instrument is required to maintain an open channel, no other surgical means can be called for.

7. That cases of stricture do occur occasionally which are so exquisitely sensitive, and in which the passage of a catheter, however skilfully performed, is followed by such severe constitutional and local disturbance, as to produce more harm than good; and *others*, which are relieved by means of a catheter, and are even fully dilated, but which have a tendency to contract again immediately upon the omission of the treatment; in such cases the operation of "external division" is most valuable.

8. That the majority of cases of what are called impermeable strictures may be rendered permeable by constitutional treatment; but that some are undoubtedly impermeable; in such cases, the operation of "perineal section" is of value.

9. When the urethra is obliterated, the operation of "perineal section" may occasionally be demanded, particularly when associated with perineal fistulæ.

10. That the worst and most intractable forms of stricture are the

result of injury, and in those cases the operation either of "external division" or "perineal section" is of great value.

11. That in boys the operation is not so successful as in adults, although no better can be suggested.—*Guy's Hospital Reports, Vol. IV.*, 1858, *p.* 79.

71.—ON THE EMPLOYMENT OF CARBONIC ACID AS A MEDICINAL AGENT.

By M. Fordos.

At the end of the last century some experiments were made by medical men in England on the effects produced by gases when used as medicinal agents. A very curious experiment of Ingen-Housz, a Dutch physician, served as the starting point for these investigations. Ingen-Housz found that a finger, from which the cuticle was removed, and which was painful when exposed to the air, was still more so in oxygen gas, but that the pain ceased when the finger was placed in carbonic acid gas. It appears, however, that this fact had been previously known in France. Beddoes, in England, repeated the experiment of Ingen-Housz, and confirmed what the latter had stated. He directed attention to the local application of carbonic acid in the treatment of ulcerated surfaces.

In 1794, Ewart treated two cases of cancer in the breast with carbonic acid, and obtained good effects. Under the influence of this treatment the pain disappeared; one of the patients was soon cured, and in the other a sensible improvement took place. Notwithstanding these interesting results, it does not appear that the local application of carbonic acid has been submitted to further investigation since that time, probably on account of the difficulties experienced in the application and management of the gas.

In 1834, M. Mojon, a professor of Genoa, employed carbonic acid gas with success in the treatment of amenorrhœa, and the severe pains which, in dysmenorrhœa precede or accompany the menstrual discharge. He considered carbonic acid to be a powerful depressant, and an excellent antiphlogistic.

About the same time the use of carbonic acid, as furnished by mineral waters, began to be advocated. It was thus used at St. Alban, in France, in cases of rheumatism.

In 1830, Dr. Heidler organized the carbonic acid bath at Marienbad; and a little later, in 1840, the same was done at Nauheim.

In fact, for several years past, carbonic acid gas has been used at most of the baths in Germany and elsewhere. The gas is collected from its sources and conducted through tubes into chambers, where it is used in different ways. It is used in baths for rheumatism, sciatica, and certain cases of paralysis. It is also applied locally to the eyes and the ears. It appears to act as a stimulant to the skin and to the circulation.

In 1855, Simpson, of Edinburgh, recommended carbonic acid for the treatment of painful affections of the uterus and its vessels, such as uterine cancer, utero-vaginal neuralgia, dysury, vesical irritability, &c., and he cites numerous instances of cure.

In 1856, M. Scanzoni employed injections of carbonic acid to induce artificial *accouchement*.

At the same time M. Follin, a surgeon in the Paris hospitals, made experiments with carbonic acid gas, and published an interesting paper on its use, in which he enters largely into the history of the subject.

Subsequently, Messrs. Demarquay, Maissonneuve, Jobert de Lamballe, Broca, Gosselin, &c., have employed the *douche* and *injections* of carbonic acid in various affections, and have obtained excellent results.

Lastly, M. Ch. Bernard, physician to the hospitals of Paris, has published a series of observations on the good effects obtained from injections of carbonic acid in cancerous affections of the uterus.

All the experiments made with carbonic acid prove that this gas may be considered a powerful anæsthetic, which may be used with advantage in many cases; they also prove that it is possessed of medicinal properties, for the effects produced are not confined to the production of insensibility, but amelioration or cure of disease sometimes occur under the influence of this treatment.

The following simple form of apparatus has been constructed with the view of facilitating the application of carbonic acid in the form of injection or *douche*, and also for applying this gas or hydrogen mixed with the vapours of chloroform, ether, amylene, creosote, or other anæsthetic agents.

Description of Apparatus.—The flask required is of thick glass, and may have a capacity of about two pints. A tin tube is made to fit into the mouth of the flask. In the interior of this tube there are some fragments of marble occupying the lower part, and above this some pieces of sponge, the object of which will be explained hereafter. The bottom of the tube is pierced with holes to allow the passage of the gas from the flask, and the top is closed with a cap, which screws on, or may be removed at pleasure. A short metallic tube, to which a flexible tube is attached, passes off laterally from near the cap, and this is used for directing the gas to the diseased parts.

Application of Carbonic Acid Gas.—When the apparatus is required to be used for the application of the gas, the tin tube is removed from the mouth of the flask, and 460 grains of tartaric acid in large crystals are introduced, so as to lie at the bottom of the vessel; over this are placed 580 grains of powdered bicarbonate of soda, and half a pint of water. The reaction and disengagement of gas will continue for about fifteen or twenty minutes without agitating the flask; afterwards agitation is to be resorted to from time to time when the action ceases. The two reacting agents being used in the

solid state, the gas is disengaged gradually as these are dissolved by the water. The carbonic acid before entering the flexible tube, passes through the space occupied by the pieces of marble and the sponge, and is thus deprived of any particles of saline matter which may be mechanically suspended in it.

I have recommended the placing of the crystals of tartaric acid at the bottom of the vessel, under the bicarbonate of soda, as the carbonic acid being disengaged from the surface of the crystals, keeps the carbonate of soda in a state of agitation, and thus promotes its solution. A regular and abundant disengagement of gas is thus ensured. If the bicarbonate of soda be at the bottom of the vessel beneath the acid the spontaneous disengagement of gas becomes suspended much sooner, and more frequent agitation of the vessel is rendered necessary.

Application of Carbonic Acid charged with the vapour of Chloroform or other Volatile Liquid.—The sponge occupying the upper part of the tin tube is intended to be used in cases such as are here contemplated.

Hardy, of Dublin, has employed with success the vapour of chloroform for producing local insensibility, and for applying it he has contrived a very ingenious apparatus.

The experiments of Hardy have been repeated by Dubois, Figuier, Aran, Jules Roux, &c. In Hardy's apparatus the chloroform is conveyed in a current of air, the presence of which must be objectionable. I have thought it preferable to substitute carbonic acid for air, and that the simultaneous use of two substances possessing anæsthetic properties, chloroform and carbonic acid, would produce insensibility more promptly and surely. The experiments that have been made in this way have proved highly satisfactory.

In order to charge the carbonic acid with the vapour of chloroform, a drachm or a drachm and a half of chloroform is to be poured over the sponge contained in the tin tube.

Application of Hydrogen charged with the vapour of Chloroform. The same apparatus may be used for applying hydrogen gas charged

with anæsthetic or medicinal vapours. It is only necessary, in this case, to substitute for the tartaric acid and bicarbonate of soda some pieces of zinc and dilute sulphuric acid.—*Pharmaceutical Journal.—Dublin Hospital Gazette, Sept.* 15, 1858, *p.* 285.

72.—*The Application of Carbonic Acid Gas to the Interior of the Bladder.* By Dr. T. Skinner, Liverpool.—[The following is a summary of the conclusions arrived at by the author, with regard to the therapeutical effects of carbonic acid gas applied to the interior of the bladder.]

1. In most painful affections of the pelvic organs, arising from nervous, sympathetic, or organic causes, carbonic acid exerts an anæsthetic and sedative effect, particularly when injected into, and retained in, the bladder.

2. In most forms of incontinence of urine, in the male or female, it is temporarily or permanently a specific.

3. According to the method I have described, there is no danger of over-distension of the bladder, or of narcotic poisoning by absorption or otherwise. [The author uses a caoutchouc bottle, holding four ounces of gas, and in the neck having a small space for the insertion, if desired, of a piece of sponge saturated with chloroform that its vapour may be combined with the gas. Only four ounces of gas are injected at once and retained from three to six hours. An ordinary catheter may be the medium of introduction.]

4. In *acute* inflammatory conditions, it is likely to aggravate the symptoms; in *chronic* states, it is the desideratum; hemorrhage and pus being no obstacles to its employment; in which condition, previously washing out the viscus is advantageous.

5. The frequency of its repetition must be guided by circumstances; it has been injected three times a day in some few cases with safety; twice a day more frequently with equal safety; often once a day, or once in two or three days, according to circumstances and the nature of the case.

In some very irritable states of the bladder, it is well to dilute it with more or less of atmospheric air, and regulate the time of retention and repetition.

7. Where it agrees, the patient ought to be made to retain it as long as possible, *passing the urine* when necessary, but *retaining the gas.* If debility or lassitude are caused by its presence in the bladder, it ought to be expelled.

8. The state of the kidneys and urine, and the digestive and assimilative organs, should be attended to, as also the condition of the pelvic viscera.

9. It promises well as a chemical litholite in the solution of phosphatic calculi, and may also prove useful in uric acid and other calculi.

10. In irritable bladder and spasmodic stricture in the male, it may be found useful; it only requires a trial.—*British Med. Journal, Aug.* 28, 1858, *p.* 727.

73.—*Belladonna in Juvenile Incontinence of Urine.*—The use of belladonna against incontinence of urine in children, as strongly recommended about a year ago by Mr. Brooke, of the Westminster Hospital, has, we believe, well borne the test of the trials which his laudation of it induced. Several surgeons have, we know, formed most favourable opinions of its efficiency. A case under Mr. Hutchinson's care, at the Metropolitan Free Hospital about three months ago, afforded very conclusive evidence of its power. The patient was a boy of ten, who had from infancy been exceedingly troubled by inability to retain his water. Nightly incontinence was a matter of rule, and very often the urine would escape during the daytime also. Nux vomica, sesquichloride of iron, &c., had been fairly tried, and without benefit. At first the balladonna seemed to do no good, but being pushed until symptoms of poisoning was apparent, it finally effected a complete cure. The bladder appeared to have wholly lost its morbid irritability, and during six weeks that the boy remained under observation, his mother stated that no single instance of incontinence had occurred. The remedy was given in solution in water, and without any adjuvant whatever.. Belladonna is one of our remedies which certainly deserves a more thorough clinical investigation of its powers than it has yet received.—*Med. Times and Gazette, July* 31, 1858, *p.* 114.

74.—URETHRO-VAGINAL FISTULA—A CURE BY SILVER SUTURE.

[In the case which was the subject of the present operation, the last confinement, twelve weeks before admission to the Samaritan Hospital, under the care of Mr. Spencer Wells, had been severe and tedious.]

Since the labour, the woman had been quite incapable of retaining any urine; and her labia, perineum, and thighs were much excoriated by the constant dribbling. On examination, a fistulous opening, hardly admitting a uterine sound, and just admitting a No. 3 catheter, was found, an inch or rather more from the meatus, establishing a communication between the vagina and bladder, or rather with the urethra just at its junction with the neck of the bladder. The opening was situated at the bottom of a deep fold of the vaginal mucous membrane. The edges were formed of flabby reddish granulations. These Mr. Wells removed, in order to make the surface to be brought into apposition even and smooth, and then passed a silver

wire suture by means of an ordinary curved needle through the vaginal mucous membrane, carrying it down to the mucous membrane lining the urethra, but without perforating this membrane. The wire was bent until the edges of the opening were closely approximated, fastened by a split shot, and the ends were cut off. Mr. Wells thought that the presence of a catheter in the urethra quite as likely to do harm as good, and preferred trying at first what the effect of simple suture would be. The woman was not confined to bed. A vaginal douche of cold water was ordered night and morning.

The effect of the little operation was immediate. The woman at once recovered the power of retaining her urine, although only for a very short time, for the first day or two. On the fourth day she said she could retain it for three or four hours. Mr. Wells removed the suture on the sixth day, and found the fistula perfectly closed. The cicatrix, though delicate, was quite perfect; and the patient said her power of retaining and passing the urine was as complete as it ever had been. As the cicatrix was not very solid, Mr. Wells wished her to stay a few days longer in the hospital, but she was anxious, for some family reasons, to get home, and left quite well on the 23rd September. When last heard of, four days afterwards, she remained perfectly well.

This is the second case Mr. Wells has met with in which a single suture sufficed for the cure of a very small fistula near the meatus. In the first case a silk suture was used, which was left to cut itself out—a catheter being kept in the bladder for several days.

The application found most generally useful at the Samaritan Hospital in relieving the excoriation which is so distressing in these cases, is a mixture of equal parts of zinc ointment and glycerine.—*Med. Times and Gazette, Oct.* 2, 1858, *p.* 346.

75.—*Aluminium Sutures a Cheap Substitute for the Silver.* By Dr. J. Mill Frodsham, House-Surgeon to the Cumberland Infirmary. —Few surgeons who have tried the silver suture will, I think, deny the great advantages it possesses over the thread or silk in common use, especially where union by the first intention is required. The only drawback to its general use appears to be its great cost. As a cheap substitute for this, I would recommend aluminium, the new metal recently discovered in Paris, possessing the same qualities for sutures as silver—viz., pliability, not causing any irritation, or becoming discoloured; and having this advantage, it being half the price. In the cases in which I have tried it, I applied the silver and aluminium alternately, and allowed them to remain in the wound nine days; when examined at the end of that time, no perceptible difference could be detected in them.—*Lancet, Sep.* 11, 1858, *p.* 280.

SYPHILITIC DISEASES.

76.—REMARKS ON THE PATHOLOGY OF SYPHILIS AND GONORRHŒA.

By J. L. Milton, Esq.

The object of the present paper is to examine how far the doctrines and nomenclature handed down by Hunter, and perpetuated by Bell, Abernethy, Carmichael. Ricord, Lee, and many others, are in strict accordance with nature, and whether the division of syphilis into local and constitutional will not admit of very great modification; whether, indeed, the term constitutional syphilis ought to be retained.

Before proceeding further, it may as well to observe, that the doctrine taught by M. Ricord, which now bids fair for a time to supplant all others, is, so far as I have been able to understand it, as follows:—Except in the case of hereditary syphilis, and those doubtful forms of disease where it is transmitted from a child to its nurse and *vice versâ*, it begins as a local affection of the genital organs or chancre, through the medium of which the constitution is in a certain number of instances also affected by syphilis. That inoculation of the virus of the chancre is the sole medium of infection, and that the stage of chancre is the only inoculable period of the disease. That the virus, in its passage through the lymphatics and blood-vessels, becomes so altered, that it is no longer inoculable, and hence that syphilis, in its secondary stage, is not conveyed by contact, though it may be propagated from parent to child. That it then undergoes a further change, which induces the tertiary symptoms, when it is neither inoculable nor transmissible. Thus, however widely he may differ from them on other points, the greatest living authority on syphilis, without a shadow of dissent, accepts the theory that syphilis, in its secondary and tertiary forms, is a constitutional disorder, and that it is a blood poison.

It is the examination of these parts which I propose in this paper; and as this cannot be properly done without previously defining the natural divisions into which the componant parts of the human frame may be resolved, it will be necessary, first of all, to take a brief survey of these.

The first and most important class of organs comprises those of organic life, as Bichat called them, but which might perhaps be called more appropriately the vital organs, such as the heart, lungs, liver, ganglionic nerves, &c., the presence of which, in a certain stage of development, is essential to the existence of every animal that breathes, and the diseases of which threaten life, from the importance of their seat.

The second are those of generation, the testicles and ovaries; and, in the more highly developed classes of animals, the appendages necessary for the extrusion of their contents, as the penis, uterus, &c.; the presence of which is essential to the continuance of the species

and the diseases of which only become dangerous when they mechanically interfere with the functions of vital organs.

The third class comprehends those called by Bichat the organs of animal life; as the eye, ear, skin, muscle, &c.; purely organs of passion, sense, and enjoyment, to which, perhaps, may be added that part of the brain on which reason depends for its existence, the thinking portion. The disorders of these parts owe their importance to their extent and violence more than to their situation.

The fourth class includes those mysterious bodies, the prostate, spleen, thymus, and thyroid glands and seminal vesicles, to which might perhaps be added the pancreas, supra-renal capsules, and pineal gland. Observers have as yet entirely failed to detect their functions. Their diseases are almost equally obscure, and are comparatively rare, unless we admit as diseases certain instances of sluggish inflammation or mechanical implication in the diseases of surrounding parts. Indeed, what we know of man's transcendental anatomy would lead us to believe that organs which remain in an undeveloped state, only perform such an amount of function as is necessary for their existence; and as disease is but the increased activity of some part of a function, we need not look to such structures either for a natural action or its disordered state.

Although these different systems are all composed of the same primitive tissues, fed by the same blood, inextricably connected by a common nervous system, and so linked together by the medium of the skin and cellular tissue as not to admit of any complete anatomical separation, yet a wide difference may be observed in the manner in which they are affected by disease, for certain forms of which certain parts of these systems seem to have a peculiar capacity. Notwithstanding the constant use of such terms as metastasis, repulsion, infection of the system, no disease, except it be hereditary, ever appears in the same form in any two of these classes; and, therefore, to speak of a disease being driven into the system, or of the repulsion or metastasis of an eruption from the skin to internal parts, or of the relief of the system by the breaking out of an eruption, being due to the disease being thrown out upon the skin, is simply to assume a theory of which pathology affords no proofs. Even hereditary diseases, if there be such a thing, which must necessarily affect the very source of every part, show a strong disposition to confine their action to one class of organs. Gout, phthisis, struma, mania, all manifest the same tendency towards a particular seat and ever recurring type.

Genuine syphilis may be defined, then, in its first stage, that of chancre and bubo, as a disease of the appendages of the organs of generation. In its second or more infectious stage, as a disease of those parts of the organs of animal life, and of the essential organs of generation, attended by a certain amount of sympathetic action in the vital organs. This stage embraces the secondary and tertiary affections of authors. It might, perhaps, be better to denominate this

secondary stage an affection of the organs of secretion; the tertiary, an affection of the structure itself of the parts attacked. Thirdly, in certain rare cases, we meet with the effects of this sympathy upon the vital organs themselves, the so-called venereal affections of the heart, lungs, and liver, to which, perhaps, the term tertiary affection or stage might be more correctly applied.

In proof of this it may be observed, that not only does syphilis generally begin in the parts of generation, but also spontaneously tends to its termination, either in them or in the nearest lymphatic gland; indeed, its normal and most favourable course may be considered that form of chancre which suppurates early, and is not followed by secondary symptoms. Even in those frightful cases in which sloughing or phagedæna attack the penis, the process of mutilation almost invariably stops at the pubis; whereas a phagedænic bubo will stretch upwards to the navel, and nearly as far in a lateral or downward direction. And when the ravages of the disease encroach beyond its natural boundary, the tendency to limit its invasion becomes more marked with each step it takes.

Again, if we examine the action of syphilis, when the skin of some other part, as the finger, is inoculated, we find that it very often, if not always, manifests a decided disposition to pass spontaneously into an obstinate affection (or species of psoriasis) of the parts in its immediate vicinity. Roseola, lichen, and psoriasis guttata occasionally attack such patients, but they rarely usher in that decided and intractable ulceration which marks tertiary syphilis.

Until very recently, the few authors who alluded to this subject, maintained that syphilis assumes a more severe form when it commences in other parts than the genitals. M. Caton went so far as to lay down the law, that it is more or less wavering, degenerate, and dangerous, according as the act by which it is conveyed differs from sexual intercourse. Bœrhaave adopted the former view, and was followed by Swediaur and Egan. M. Ricord gave it no active opposition in his earlier years, though he now maintains a very different opinion, and has recorded the interesting facts, which I have often verified, that affections of the glands do not follow inoculation of the thigh.

M. Auzias Turenne was perhaps the first who endeavoured to show, by experiment, that syphilis is less severe when it begins in other parts than those of generation, and a close analogy of the cases recorded by Swediaur, Mathias, Ricord, Lee, and others, corroborates his views. In the few instances I have seen of this form of the disease, the infection was communicated through a wound on the finger; and in all but one there were no symptoms beyond papular eruption and swelling of a gland in the axilla, which yielded to very simple remedies. In the exceptional case, the disease gave way to a moderate use of mercury and chalk, and then returned in the form of psoriasis of the palms of the hands. Though very trou-

blesome, it did not extend further, and none of the children born subsequent to the infection ever showed the least trace of the disease. Indeed, in all these cases, the throat and genital organs remained unaffected.

Reverting now to the ordinary form of syphilis, and tracing it to the second stage, we find that it manifests a totally distinct class of features. It is now, probably, a disease of the secreting organs of the skin, mouth, and throat; and one surgeon, Mr. Gay, has remarked, "that one of the most constant distinguishing features of the systemic syphilis in the skin is that it principally affects that constituent in which the faculty of secreting some peculiar pigment exists;" it leaves no abiding traces of its existence; it attacks the semen, the eye, and other organs of the senses, and the inoculation of the pustules is no longer attended with the same results.

So soon as this tendency has fairly developed itself, the chancre, if still unhealed, begins to cicatrise, and with that loses the power of communicating infection; and so strong is this disposition, that though it may by neglect, friction, connection, or similar agencies, be prevented for a time from healing, yet it generally triumphs, in a short time, over every obstacle. Indeed, so far as my own observations allow me to form a conclusion, I should say it was impossible for a chancre to go on spreading and secondary symptoms to progress at the same time; cases to the contrary are spoken of, but they will be found, on experiment, to be secondary ulcerations and not inoculable; while, in rebellious primary ulceration, the tendency to the production of secondary symptoms remains at zero.

Finally, if we admit the view urged by some writers, that the site of chancre remains for a certain time capable of communicating a peculiar modification of syphilis, without the medium of an open sore, it is now that this change takes place.

It may be urged against these views, that syphilis in this stage attacks the throat and mouth, and even at a later period the larynx, rectum, and bladder. As this objection might appear fatal to the doctrine, it may be as well to examine it more fully. There can be no question of the fact, and equally little doubt that syphilis rarely passes the boundary which separates these structures from those of organic life; that the parts most liable to be attacked by it are the seats of sensations, pains, and enjoyments generally; parts to which light and air have access. It will be said that the pharynx and larynx are organised like the intestines, and belong to the great gastro-pulmonary tract, but this would be to confound great development of the extremity of a tube with its essential non-sentient parts. The larynx and pharynx have clearly much more to do with speaking, hearing, singing, &c., than with any vital function.

It is very possible that syphilis may now and then pass the boundary between these parts and those which are truly vital, especially in the

more advanced period of the second stage, and for a short distance. When this unfortunate result ensues, it will, I think, be found to be a repetition of the process by which the disease extends from a chancre to the thigh or pubis, that is, an action constantly tending to spontaneous arrest. Among the preparations I have as yet examined of syphilitic ulceration of the larynx, the destructive action had not in any one passed beyond the vocal cords; and of ulceration of the œsophagus I have not been able to find any instances. When, then, we consider that they are anatomically so closely connected, that the same mucous membrane, cellular tissue, nerves and blood-vessels, run through their framework, we must admit that it would be quite in conformity with the previous progress of the disease, to pass the narrow boundary which separates the larynx from the trachea or the pharynx from the œsophagus. Indeed, I am not prepared to assert that it never does to a certain extent. The essential point, however, is, that the encroachment is most rare, if it occurs at all, and extends but little beyond the boundary separating these two systems, and that there is clearly a point at which it ceases to exert its power.

Although syphilitic affections of the anus are so common, yet extension from this part along the colon, or even beyond that portion of the rectum which is endowed with a certain amount of animal sensation, is unusual and even doubtful; and though chancre in the urethra is not a very uncommon form of disease, yet I have only found an account of two cases in which the ulceration extended to the bladder. They are quoted by M. Ricord, from a thesis by M. de Lavergne. In one, the patient died of marasmus, having apparently had only gonorrhœa and orchitis; the secretion from the urethra, however, yielded a chancrous pustule, and, after death, rounded ulcerations, possessing a distinct syphilitic character, were found in the bladder. In the second case, the patient suffered from chancre and died. Autopsy revealed extensive ulceration of the spongy part of the urethra, perforating the entire thickness of the mucous membrane, and behind the bulb traces were found of a vast phagedænic chancre, extending along the membranous and prostatic parts of the urethra, the neck of the bladder, and even into the cavity of the viscera.

In a more advanced period of this stage, the so-called tertiary symptoms appear. The process of destruction begins, tissues are attacked, and the disease becomes less diffuse and more formidable. But the fact of most importance to the present discussion is its tendency, as it becomes more and more localised in one set of organs, to recede from others. M. Ricord affirms that, at this period, the affection is no longer capable of transmission, by descent, from parent to child; and the observations and cases I have as yet been able to collect, not only corroborate his statement, as respects the father at least, but show, so far as they go, that syphilitic children often spring

from parents who do not, and never did, suffer from the disease in a severe form; while those who have felt its ravages most extensively, often propagate a healthy offspring. Amongst others, I possess two very complete histories of families in which I think this point was shown, and of which I now give a very short abstract.

In the one, the husband and wife were both attacked with the disease in a very severe form, and were both salivated after its nature had become quite apparent. Neither of them benefited much by the process. The husband, after suffering from syphilis for years, went mad, and ended his days in an asylum. His wife remained seventeen months under the care of her medical attendant, without ever getting thoroughly well, and some years ago came under my care with an obstinate tertiary affection of the tongue. Several children were born subsequent to the period of infection. They were all alive a few months ago, and though I have repeatedly examined some of the younger ones, and carefully cross-questioned the mother, who was perfectly aware of the nature of the disease, and most anxious that it should be traced out, if it really attacked any of the family, yet all I could learn leads me to believe that not one of those children ever had a symptom of syphilis.

In the other case, the husband and wife were also salivated; the husband before marriage. He had an attack two years after, and was again salivated. In the first attack, his symptoms, which were but very slight, were easily removed, and indeed, would have been scarcely thought to require mercury; but he had the good fortune to fall in with one of those strong-minded old surgeons who are not disposed to tolerate any hasty innovations, and who consider blue ointment as the only Balm of Gilead for the venereal. This gentleman put him so effectually through a course of mercury as to cure him, not only of his syphilis, but well nigh of all other mundane evils at the same time, for the second attack, he was treated with mercury internally to salivation. He had in all two slight attacks of eruption and sore throat. I examined him very carefully, but detected no traces of syphilis either in the genital organs or other parts. His wife was confined, in four deliveries, of five children, most of whom died early and with suspicious symptoms; one was born with an eruption. She then aborted; had for the first time symptoms of secondary syphilis, was mercuralised, aborted again, and then again. Her symptoms were never severe, and consisted of two slight attacks of tubercles on the face, one of sore throat, and one of tissues on the left arm.

In other cases, the course of the disease was still more severe in the children, but of shorter duration; in one instance, two children of a Jew were born syphilitic, the father having, so far as I could detect, no secondary symptoms whatever, and the mother only slight traces of the disease. During three years they have occasionally attended whenever any of the children, especially the oldest

of the two, had a relapse, but they have neither of them had any further symptoms of the disease. Indeed, I could fill up the space allotted to this paper by detailing similar cases. It is not, however, meant by this to assert that the propagation of venereal children is always marked by the absence of visible signs of syphilis in the father; but simply to state that, so far as my own observations warrant me in drawing a conclusion, the evident symptoms of the disease are less apparent in persons whose offspring is clearly affected.

If the affections of the lungs, liver, pleura, &c., which in some persons follow inveterate syphilis and close the scene, are to be admitted as purely syphilitic, then, I submit, either that the term tertiary would be more correctly applied to this stage, or that it should be distinguished as a widely different epoch of the affection. Before, however, it is conceded that such affections are syphilitic, it will be as well to examine the evidence upon which this opinion is founded.

The first, and one of the most serious objections, is the extreme rarity of such cases. The statistics already placed before the profession, of late years, have shown that death from syphilis is, comparatively speaking, extremely rare, even with such an enormous number of patients as are yearly treated in London for every form and grade of this disease. In three years, only eight patients died of syphilis in St. Bartholomew's Hospital, and four of these sunk under the shock of sloughing phagedæna; twelve more, indeed, died *with* syphilis, and in the venereal ward, but there is sufficient evidence that these patients succumbed under other diseases, aggravated by the presence of syphilis. Sir George Ballingall states, that for many years of his life he was in the habit of seeing at least ten to twenty venereal cases daily, and that he only recollected one instance of death from this disease where the treatment from first to last fell under his own observation. Similar evidence is yielded by the careful labours of Mr. Judd and Mr. Acton, by Mr. Lloyd, &c., but it is not necessary, perhaps, to accumulate evidence on a point of doctrine which is, I believe, generally admitted.

If, then, with such ample materials for a fatal result, this termination is so rare, there must be some reason for it, and this, I submit, consists in the inability of the vital organs to take on the same action as the skin. Unless some law of this kind really prevails, how does it happen that a disease, which we are told contaminates the blood, does not affect every organ supplied by the blood? How is it that a malady, so intractable in its natural seat, should not more frequently produce the inevitable results of intractable maladies of the vital organs, death?

Secondary and tertiary syphilis invade the most healthy; no constitution seems to possess immunity against their attacks; but when the patient sinks under the disease, we almost always find that ill-regu-

lated or over-prolonged courses of mercury, dissipation, and constitutional weakness, have shaped the issue of the case. He does not die from a specific disease, marked by salient and familiar symptoms, but from some common form of illness, such as phthisis, pleuritis, pneumonia, anasarca, or exhaustion. Secondary and tertiary syphilis always appear in a form which at least awakens the suspicions of every observant surgeon; but it is very doubtful if the most accomplished pathologist would recognise the so-called syphilitic affection of the lungs and liver were the accompanying circumstances and history of the case withheld.

The most complete account I have met with of syphilitic diseases of the lungs, is that given by M. Lagneau, yet when we analyse the signs described by him as characteristic of pulmonary syphilis, we find but very doubtful features of a distinct form of disease. In three very careful autopsies of syphilitic patients, one of whom died of phthisis, the two others of chronic pneumonia. I was unable to detect any decided traces of syphilis, and as, during the time I assisted Dr. Peacock, when Governor of the Royal Infirmary of Edinburgh, and subsequently in London, I made and assisted at upwards of two hundred *post-mortem* examinations, I am perhaps justified in assuming that, had any striking evidence of syphilis been present, it would have been detected. Mr. William Adams, in twelve years' experience as demonstrator of morbid anatomy at St. Thomas's Hospital, informs me that he has not been able to recognise, in persons dying from syphilis, any of the distinctive features of this disease in the vital organs. They all showed evidence of having died from common affections, fatty liver being one of the most frequent phenomena in old standing cases.

Syphilitic ulcerations of the larger intestines have been noticed after death, and even diagnosed during life; but, in all the cases I have heard of, a distinct syphilitic affection of some other part revealed the nature of the malady; and the question naturally arises, whether these ulcerations would have been pronounced syphilitic, but for this guide, and, therefore, whether they are to be considered as such.

In the infant, we naturally expect that syphilis must assail every organ at its source, and without distinction. So far as my knowledge of physiology, which is not very extensive, goes, it is supposed that the spermatozoa pass through the chink in the zona pellucida, and that, immediately after, the cells in the germinal vesicle begin to liquify and disappear under the absorbing power of those from which the permanent structures are to be produced; thus tainting every primary structure. This is so very different a process from inoculation of the adult, that death of the fœtus and syphilitic affections of the thymus gland are not fairly to be considered as facts which invalidate the previous conclusions.

But, the more carefully we study the phenomena of syphilis, the

more clearly do we see the nature of the disease reasserting its power; as the organs of animal and generative life become more developed, syphilis becomes more localised in them, and recedes from or exerts less power over the vital organs, so that death grows less frequent with the change from the embryo to the child, and lessens with its advancing years. In an infant suffering under syphilis, the skin is sure to be affected; while the so-called syphilitic disease of the lungs is rare, and becomes more so as the development of the organs of the senses and volition begins to equal, and at last exceed, that of the vital organs.

This, or some similar law, seems to regulate the influence which treatment exerts over this mysterious disease. In the very young, syphilis is almost always cured; in the adult, the chances are more evenly balanced; and when the animal system begins to decline in vigour, the probability of a cure lessens. Mr. Langston Parker tells us, that after forty we can rarely hope for a cure, especially if the mercurial vapour be not employed, and the disease assumes the prostate or tubercular form. *If such be the case*, we have three great epochs in which syphilis may terminate very differently. 1. Intra-uterine life, or the period in which the development of the vital organs is most rapid and the disease most frequently fatal. 2. The interval between birth and mature age; during which the animal and generative organs attain their utmost vigour; in which syphilis is less fatal and most easily cured; and, 3. The interval between maturity and the decline of life; in which it is most curable, least fatal, and least productive of sympathetic disturbance of the vital organs.

For these and other reasons to be subsequently given, I submit, that the use of such terms as constitutional or systemic syphilis, infection of the system, &c., is not warranted in the present state of our knowledge. If medicine is to attain that certainty and accuracy of research which have produced such splendid results in allied branches of learning, it can only be by eliminating all equivocal phrases and hasty generalisation.

When we examine the course of gonorrhœa, we find still further proof of the doctrine I have ventured to bring forward. Not only does this disorder appear to show that an inflammation of the same kind acts very differently upon analogous structures in these different systems, but, like syphilis, it proves that there is much less sympathy between the vital organs and those of generation, than between the latter and those of animal life. A gonorrhœa may remain for years, and yet, when cured, leave no trace of its presence; whereas, the existence of a purulent discharge for as many weeks, from the conjunctiva or trachea, could scarcely fail to be accompanied by a certain amount of mischief: and while every surgeon has seen gonorrhœal rheumatism or ophthalmia, an analogous affection of any vital organ has yet to be discovered.

However long a gonorrhœa may last, however acute the form it

may assume, the parts in the immediate vicinity are seldom implicated, and then but slightly. Hunter's law of sympathy by continuity, may connect the parts of which a system is composed, but it does not seem to possess the power of extending from one system to another. The redness of the scrotum in orchitis and erysipelas, or acute œdema of the scrotum, perhaps never extend to the abdomen, though the skin over the pelvis may become a little swelled. If colickly pains, depression, and nausea, accompany swelled testicle in some persons, they seem to be of a purely nervous character; evidence only of the connection of these parts with the sympathetic and perhaps the spinal cord. The purulent inflammation of gonorrhœa may extend from the vagina to the uterus, and even cause pain and swelling of the ovaries; it may creep along the vasa deferentia to the epididymis, and even induce a certain form of painful irritation in the testicle or bladder; but the general health remains unaffected in the most obstinate cases, unless it suffer from the mental irritation occasioned by the presence of the disorder, or the large quantities of powerful medicines taken to remove it.

"I have seen cases," says Mr. Hunter, "where the irritation (of gonorrhœa) has extended so far as to affect with real pain the thighs and buttocks and the abdominal muscles, so that the patient has been obliged to lie quiet in a horizontal position. The pain has at times been very acute, and the parts have been very sore to the touch; and they have even swelled, *but the swelling has not been of the inflammatory kind*, for notwithstanding a visible fulness, the parts have been rather soft."

If syphilis and gonorrhœa are compared, we find simply two diseases arising in the same parts, and equally obedient to the same law; but there the analogy stops short. Not only does gonorrhœa differ from syphilis in its first stage, by not producing the characteristic pustule when inoculated, and in the second by the absence of eruption and ulceration, by the rare occurrence of a second stage at all; but it differs still more widely in the fact, that with the disappearance of evident symptoms of its existence in its primary seat, the possibility of secondary affection arising disappears also.

But I may perhaps be permitted to go still further, and inquire whether gonorrhœal rheumatism, ophthalmia, or any other sequela of gonorrhœa, supposed or real, can be admitted as secondary in the same sense as we use this term in speaking of syphilis. The inquiry is quickly answered in the negative; for which a certain amount of development, in the depositive process of chancre, is sure to be followed by secondary symptoms; gonorrhœa may attain every degree of activity, and reappear any number of times, without once being followed by a symptom of the kind. Syphilis will rarely produce secondary symptoms twice in the same person; but frequently, a patient who once suffers from gonorrhœal rheumatism or ophthalmia, will be assailed by these sequela after each attack of the parent disease.

Lastly, the phenomena of gonorrhœa enable us to trace still more clearly a great difference between the testicles and other structures.

Bone, muscle, cellular membrane, pass through all the phases of inflammation; but in the testicle such a termination as sloughing is unknown; suppuration even, is very rare. Even the coverings of the testicles present peculiar features in this respect; they seem endowed with too little vitality, or else too much irritability, to endure a continuance of the process. Inflammation of the vaginal sac terminates with extreme rapidity in effusion of serum, which, like the sudden hardening and thickening of the epididymis in swelled testicle, is absorbed very slowly. In the scrotum, though highly vascular, sloughing is as sudden, and sometimes as unlooked for, as the rapid repair it undergoes. When attacked by acute œdema, it will swell enormously in the course of a single night.

Unlike syphilis, gonorrhœa attacks those mysterous organs, the prostate and seminal vesicles; the latter much the more rarely of the two. But its action on this class of structures is always limited to those bodies, and then, apparently, simply because they are anatomically and closely connected with the genito-urinary organs. The more distant parts, such as the thymus and thyroid glands, are rarely if ever affected.

Should the views, of which an explanation has now been attempted, ever be received, they may possibly explain some facts long known with respect to the action of medicines on these diseases: as, for instance, how it happens that mercury has always proved so much more reliable and more curative, when applied to the skin in the form of friction and vapour; and why its action on the bowels and nervous system is in an inverse ratio to its control over the disease; why this powerful mineral acts so beneficially on children when applied directly to the animal system, which is undergoing such rapid development. In them, we may discover the reason why in chancre and swelled testicle, antiphlogistic means are inert; while sedatives like camphor and opium, which act on one of their common bonds, with the vital organs, the nervous system, so easily subdue these painful symptoms; and why those remedies which act on the urinal tract, like copaiba and potass, and direct applications to the seat of disease, as injections, effect ten times more cures than the most powerful alteratives, purgatives, antiphlogistics, and tonics, which we know to be sheet-anchors in the treatment of so many serious affections of the vital and animal organs.

In presuming to alter thus widely some of the laws laid down by Bichat and Hunter, a certain amount of censure must necessarily be expected; but as the facts on which these views are founded have been laid before my readers, I must refer the matter to their decision. —*Edin. Med. Journal, June* 1858, *p.* 1072.

77.—AN INSTANCE OF SYPHILIS WITH SECONDARY CHARACTERISTICS IN A FEMALE,

COMMUNICATED FROM A CASE OF THE SECONDARY DISEASE IN ANOTHER FEMALE.

By Dr. John Elliotson, F.R.S.

[In January last, Dr. Elliotson was sent for to a lady suffering from an eruption upon the fore part of the scalp, where the hair is thinnest. It originally consisted of copper-coloured spots and patches, with successions of minute pustules. This was at once suspected to be syphilitic. The following were briefly the facts of the case. She had been married twelve years, and had never been pregnant. Her husband, a man of unexceptionable moral character, had never had any syphilitic affection. The month previously, the lady's maid had been sent away on account of an eruption on the face and cracks in the palms of the hands. This disease was described on the ticket given to her at one of the hospitals as *Psoriasis Syphilitica.*]

I have no doubt that the disease was communicated to the mistress from the maid, the palms of whose hands were sore and fissured with syphilitic psoriasis. The maid arranged the lady's hair night and morning, doing much with her bare hands, applying oils, pomatum, &c., *and smoothing it down flat with her palms*, according to the present fashion of wearing the hair. Any diseased secretion must thus have been *well rubbed into the scalp, especially at the central and front portion where the hair was parted and the skin bared.* Had the disease not been arrested by mercury, there cannot be a question that it would have spread beyond the face, and probably affected the palms of the mistress like those of the maid. A wound or raw surface is not necessary for the effect of a contagion or poison applied externally: friction may secure its admission. Primary syphilitic sores continually appear where there had been no abrasion; and I have known the poison of a person who had died of a malignant or virulent disease introduced fatally by a sound finger being incautiously rubbed upon the moist diseased spot during an autopsy. Even friction is not always necessary: repeated application of a poison may prove sufficient.

Authors of repute assure us that they have never been able to produce syphilis by inoculating pus or other secretion from a secondary syphilitic symptom. Yet Mr. Langston Parker says that MM. Waller and Vidal de Cassis declare they themselves have succeeded: and that he, as well as Biett, Cazenove, Lagneau, Stark, and Todd, has frequently seen secondary syphilis communicated, not indeed by inoculation, but by contact; more especially between husband and wife, whose contact is of course usually the utmost possible; the husband having had primary symptoms which were entirely removed before marriage. This agrees with the fact already mentioned of the effects of a diseased fluid either rubbed into or repeatedly applied to a sound surface.

In the experience of some foreign authors and Mr. Langston Parker the symptoms of the cutaneous disease communicated from the secondary form are often exactly the same as those of the individual who communicated it, and there are *no primary symptoms.* Psoriasis gives poriasis, lichen gives lichen, &c., and condylomata give rise to condylomata: just as the pus of primary syphilis produces a primary sore.

My case, so striking and interesting to myself at least, though likely to occasion a mementary doubt in those who have never seen an example of the communication of secondary syphilis and have habitually supposed it impossible—notwithstanding the common and universally admitted fact of the contamination of the germ within the mother by the father who shows no sign of the disease, and must therefore communicate it as in the constitutional or secondary way, and does in truth produce not primary but secondary symptoms,—perfectly coincides with the recent observations of certain careful practitioners. For secondary syphilis was communicated, and the effect was, as indeed these words imply, not primary, but secondary syphilis: the symptoms produced were, as far as the disease went, those of the communicating person: the effect resulted, not from inoculation, but from mere continued and repeated contact and friction.

It is not probable that a combination of such circumstances will present itself to me again.

A week now after this was sent to the Editor, I have received from Dr. Copland the completion of the handsome and kind present of his truly wonderful "*Dictionary of Practical Medicine.*" This last part contains the article on the venereal disease, and bears witness to the communication of secondary syphilis. "I have had sufficient reason to conclude," he says, "that whenever a secondary venereal ulceration, seated in the integuments or in the mouth and throat, produces a secretion or discharge which comes in contact with a mucous surface or with an abrasion of the cutaneous surface, or is even allowed to remain in contact with an unabraded surface, infection is liable to take place, and that this liability exists both in children and in adults. The communicability of secondary syphilis, especially when the sores have proceeded to secrete or produce a fluid exudation, was a well-recognised fact in former times, and has been witnessed by myself during the course of my experience in several instances. It was a recognised fact by Dr. Colles; and although Hunter believed that secondary symptoms could no longer infect, Mr. Babington remarks, when commenting on this belief, that 'the facts (that they do infect) are so well established, that it is more easy to question the principle than to doubt the facts.'" "This mode of communicating the malady was often observed in all the varieties of it described above as syphilitic diseases, and in the usual manifestations of the malady, from the end of the fifteenth until the close of the seventeenth century, or even later. The extensive prevalence of syphilis during these centuries,

&c.," may be more correctly accounted for by the facts of the secondary or early constitutional effects of the malady having become thus virulently contagious. &c." "The lower classes in Europe during the centuries of the earlier prevalence of syphilis were remarkable for their neglect of cleanliness, for their use of woollen night and day clothes next to the skin, for the habit of two, three, or more, sleeping in the same bed, often in a state of nudity, and for drinking and eating out of the same vessels, and for these and other social conditions favouring the communication of the disease in its secondary stage, independently of sexual interconrse."—*Med. Times and Gaz., Sept. 5*, 1858, *p.* 237.

78.—*Chlorate of Potass in Mercurial Salivation.*—As the results of what has been published in France upon the subject, and of the cases that have occurred in his own practice, M. Laborde comes to the following conclusions:—1. The chlorate exerts a real curative influence in mercurial stomatitis. 2. Moreover, it possesses a certain prophylactic or preventive action, permitting the prolonged use of mercury without salivation being induced. 3. In medium cases of stomatitis it has not required to be administered beyond four days; but in serious cases eleven days use of it has been necessary. 4. Its good effects almost always begin to manifest themselves by the second or third day. 5. In cases of medium severity, the dose of 60 to 75 grains per diem has proved sufficient; and increasing this does not seem to exert much influence, except perhaps in very bad cases. 6. It is equally efficacious used as a gargarism; but it seems to be especially adapted in this form for the more purely local accidents, as gurgival tumefaction, pathological coloration, ulceration, &c.—*Bull. de Thérap.—Med. Times and Gazette, Sept.* 11, 1858, *p.* 280.

DISEASES OF THE SKIN.

79.—THERAPEUTICS OF THE HOSPITAL FOR SKIN DISEASES.

We may remark that an undisturbed faith in *the efficiency of the long-continued use of mercury in small doses, for the cure of various chronic inflammatory affections*, is a very important item in Messrs. Startin and M'Whinnie's successful practice. What, if rightly looked at, are many of the constitutional forms of skin disease, but chronic inflammation of the integument; more or less, and often less rather than more, peculiar in its character? If a sore, with indurated swollen edges, like certain lupus ulcers, were discovered on the os uteri, what constitutional treatment would suggest itself? A mild mercurial course, and the use of caustics topically,

would probably be what most judicious practitioners would advise. Under it he would expect to see the œdema of surrounding tissues disappear, the edge of the ulcer soften down, and granulations show themselves. What is the impediment to the healing of chronic ulcers on the leg but inflammation; aggravated, let it be granted, by the peculiarities of the circulation of the part, but still in essence inflammation? We are well aware that such ulcers may be cured most satisfactorily by attention to local conditions only; but that constitutional measures are also very efficient, even when almost unaided, no one who has attended the practice of this hospital can doubt. Although not unusually classed among skin diseases, yet this institution has obtained a very extensive reputation for the treatment of ulcers of the leg, and numerous sufferers from them attend there. Many of the cases are very bad ones. Mr. Startin always directs the patient to bandage the limb, but no very particular attention is devoted to this part of the treatment. Internally, the mistura hyd. comp. is mostly ordered, and to the sore itself the unguentum rubrum is applied. If the ulcer is sloughy or very unhealthy-looking, the acid nitrate of mercury is applied as a caustic, previous to the use of the ointment. These cases are never taken in, nor are the patients directed to confine themselves to bed; and from the rapid healing which often ensues, we cannot but think that the mercurial medication, both internal and local, has usually a considerable share in the cure. In lupus, Mr. Startin almost always orders either the calomel and opium pill, or the mercurial mixture, usually combining the former with the simultaneous use of cod-liver oil. In estimating the effect of the mercurial in these cases, and in attempting to explain it, it must always be remembered that a taint of hereditary syphilis may possibly be the real cause. There can be little doubt but that in a considerable proportion of cases such is the fact, and that the surgeon who prescribes mercury, may possibly eradicate a specific virus; while in others the beneficial influence of the mineral must be attributed to its general efficiency against all kinds of chronic inflammation. To take, again, acute eczema—can there be any doubt as to the inflammatory nature of the diathesis which attends well-marked cases? They are such as, under the old regime, would have been deemed to require bleeding; and when, even now, that expedient is resorted to, a cupped and buffed condition of the blood usually bears out the practice. In these, Mr. Startin almost always orders the bichloride mixture, with the addition usually of from five to ten minims of colchicum to each dose. Now and then salivation will unexpectedly occur; and the irritation will often subside most rapidly on slight ptyalism being induced. Another class of cases in which, contrary to the generally received doctrine, Mr. Startin often orders mercury, are those of so-called "scrofulous" character. Cases of gland disease in the neck, with extensive ulceration of the adjacent skin, often present themselves; and others of what is termed "cutaneous

struma," a form of primary ulceration of the integument, occurring in feeble young persons, and distinguished by its undermined non-indurated edge from true lupus. In these, the internal use of calomel and opium in minute doses, with cod-liver oil, is almost invariably ordered. We have watched cases in which patients, suffering from strumous disease of the cervical glands and skin, took calomel once or twice daily for many months under Mr. Startin's care, and not only without injury to their general health, but with decided benefit to it, and with exceedingly favourable results as regarded the local disease. To the sceptical on this subject we must recommend Dr. Wilson Phillip's little book on the use of minute doses of mercury, and we may also venture to make reference to the writings of Abernethy, Tyrrell, Carmichael, and others.—*Med. Times and Gazette, June* 12, 1858, *p.* 602.

80.—*Treatment of Eczema of the Scalp and Face in Children.*—A fair-haired blue-eyed child, aged two years was admitted with that so common and so troublesome form of eczema in which the whole face and scalp are involved, but the rest of the surface free. It had suffered since the age of six months, but excepting the irritation of the eruption its general health was not interfered with. Mr. Startin ordered as follows:—

Misturæ potassii iodid: ℥j. aq. ℥v. capt. ℥j. ter die.

The surface to be washed with the yolk of egg and water, and smeared with the nitric oxide of mercury ointment. Rapid improvement ensued in this individual case; and it may be taken as a fair illustration of the treatment usually adopted. In obstinate cases the compound iodide mixture, which contains arsenic, is often employed.

The formulæ for the above-mentioned preparations are:—of the mixture—a drachm of iodine, an ounce of liquor potassæ, and a pint of distilled water, each drachm containing half a grain of iodine. Of the liniment—olive oil, two ounces; lard, two ounces; powdered nitric oxide of mercury, a drachm; oil of bitter almonds, half a scruple; and glycerine, ℥j.—*Med. Times and Gazette, Sept.* 4, 1858, *p.* 245.

81.—*Treatment of the Different Forms of Acne.*—In acne rosacea, and acne simplex, the acid solution of iron in half ounce doses is usually ordered, while for the tubercular form Mr. Startin places more confidence in the iodide of iron. The latter is generally given in from one to two grain doses. Malt liquors are strictly prohibited in all cases. In almost all the local use of the red lotion is directed, and any larger pustules or tubercles, which may be observed from time to time, are touched on their apices with the acid nitrate of mercury solution. In addition to these remedies the direction is mostly given

to be particular in squeezing out the contents of the distended follicles as soon as they become perceptible.

The "acid solution of iron" is made by dissolving three ounces of Epsom salts, and two drachms of sulphate of iron, in half an ounce of dilute sulphuric acid, and a pint of infusion of quassia. The "Red Lotion" consists of two scruples of the bichloride of mercury, one of the bisulpheret, and ten minims of creosote, in a pint of water; each ounce containing two grains of the bichloride.—*Med. Times and Gazette, Sept.* 4, 1858, *p*, 245.

82.—*Torpid Ulcers. Galvanism.* By HARRY WM. LOBB, Esq.—[Among other cases in which galvanism is useful, the author mentions torpid ulcers in the legs of old people, where, through want of vitality in the part, the sore will not heal.]—Nothing is so usefnl as galvanism, nothing can compare with the rapidity with which a new character is given to the flabby granulations which now spring up red and healthy, and the ulcer quickly heals. A disc of silver, a little larger than the ulcer to be healed, is attached to a plate of zinc three times the surface of the silver by a wire long enough to allow the zinc to be placed on perfectly healthy skin *above* the ulcer, so as to allow a *direct* current of electricity to pass. The silver being placed upon the ulcer the limb is bandaged, so as to retain the plates in apposition and to give uniform support; under the zinc plate place a piece of flannel, *always kept moist*, otherwise the current will not pass, either with water, salt and water, or diluted acid. By modifications of this apparatus, according to circumstances, any sore may be treated. I have used it with success for sore nipples.—*Med. Circular, June* 9, 1858, *p.* 265.

83.—*Chlorate of Potash in Scrofulous Sores.*—M. BOUCHUT employs with great success a solution of this substance (℥j ad ℥iij aquæ) as a local application to external sores in scrofulous children. He has also found it highly useful in arresting the progress of ulcers supervening upon the employment of blisters, as also in ulcerated chilblains.—*Journal of Practical Medicine.—Med. Times and Gazette, July* 10, 1858, *p.* 43.

84.—*Local use of Iodine to Boils.* By Dr. EDWARD RIGBY.—The value of iodine as a local application in boils and carbuncles, does not appear to be so generally known as it deserves. In every case of boils which has chanced to come under my notice, I have directed the whole mass of indurated tissue to be painted with at least three coats of the Pharmacopœia tincture for several nights in succession; and, unless the boil has been at the point of bursting, the progress has been arrested in every instance, and the hardness, swelling, and tenderness of the part have quickly subsided.

In a case of carbuncle of the chin in a delicate lad, about twenty, affecting not only the whole lower lip, but spreading rapidly to the integuments of the throat, which had begun to assume a solid brawn-like feel, the diseased action was arrested after a few applications night and morning, and in three or four days more the part became soft, the swelling and tenderness subsided. I acknowledge that this change was considerably assisted by alterative and purgative medicines, followed by the infusion of red bark and the nitro-muriatic acid. Still, however, the immediate arrest of the diseased action was evidently due to the iodine application; and I may add, that I was led to make the experiment from reasoning on its well-known effects in erysipelas.—*Med. Times and Gazette, July* 24, 1858, *p.* 98.

85.—*Local use of Belladonna in Erysipelas and Carbuncular Boils.* By Robert B. Cooke. Esq., Scarborough.—I am not aware that the local application of *belladonna* in boils and erysipelas has been generally tried; but my experience of its use justifies me in recommending it to those of my professional brethren who may not have hitherto given it a trial. I have also found it afford the greatest relief as an application to inflamed chilblains, to which, as also to an erysipelatous surface, it may be applied in the form of tincture, or as a lotion made from the extract. To a carbuncle or boil, an ointment composed of the extract, with some simple cerate, will be found a convenient application.—*Med. Times and Gazette, July* 31, 1858, *p.* 126.

86.—*On the Treatment of Carbuncle.* By Dr. Gutzeit.—Dr. Gutzeit of Riga recommends the following ointment as the sole treatment of simple carbuncle—viz., half a drachm of opium mixed up with two ounces of white ointment, spread as thick as the back of a knife on linen rag, and applied to the tumour and its circumference three or four times daily. He says he cannot feel surprised at the incredulity with which his recommendation will be received; but having in numerous cases derived great benefit from the employment of this means, he must insist upon its utility. Relief takes place in some cases with remarkable rapidity, the dreadful pain becoming sometimes supportable after half an hour, while the various stages of the affection are expedited. The general symptoms, too, undergo a corresponding amendment. Moreover, the means is applicable to any stage of the affection, from the commencement of tumefaction to the separation of the eschar.—*Brit. and For. Med. Chir. Review, July,* 1858, *p.* 271.

87.—*Corns Cured by the Tincture of Iodine.*—Drs. Varges and Wager state, in the 'Zeitung für Med. und Chir.,' that painting inveterate corns with tincture of iodine three or four times a day with

a camel's-hair brush will remove them in a very short time. When the corns are situated *between* the toes, the tincture should be mixed with glycerine, and the resulting fluid be spread on some German tinder, which latter is then placed between the toes.—*Lancet, Sep.* 4, 1858, *p.* 268.

88.—*Disuse of Soap.*—Mr. STARTIN is very emphatic in his directions to patients suffering from cutaneous eruptions, to avoid the application of soap to the irritated part. In the general directions appended to the pharmacopœia is the following:—"Avoid using soap of *any kind* to the affected parts; substitute to cleanse the skin, instead of soap, a paste or gruel made of bran, oatmeal, linseed-meal, arrowroot, or starch and warm water, or with warm milk and water; and yolk of egg and warm water to cleanse the scalp." The last named application is exceedingly useful in cases of porrigo and eczema of the scalp in children. Both of these affections are often aggravated and kept up by the persevering use of soap.—*Med. Times and Gazette, Sept.* 4, 1858, *p.* 245.

89.—*Pediculi Pubis.*—[An enquiry in the 'Lancet' as to the most speedy and effectual way of destroying pediculi pubis, has elicited several answers of practical value. Dr. RYDING of Oakham, writes:]

I would suggest the following lotion, which I never knew to fail in the destruction of the pediculus pubis:—Bichloride of mercury, twelve grains; rectified spirits of wine, two ounces; distilled water, two ounces. This is to be applied carefully with a piece of flannel for ten minutes, immediately afterwards well dusting the parts with ammonio-chloride of mercury. This process is to be repeated night and morning for two days, then a warm bath with soap. The return of these insects is due to the non-destruction (by the previous treatment) of the ova. This is perfectly effected by the lotion, which destroys the ova, entering by endosmosis and bursting them, the spirit at the same time dissolving the gummy substance by which they adhere to the hair. The ammonio-chloride is used (being in a finely divided state and solid) to arrest the pediculi from travelling away from the influence of the solution.

The solution must not be used stronger, as it would be liable to excoriate the skin of the scrotum.

[Another writer recommends finely levigated nitric oxide of mercury, two drachms; olive oil, one ounce: mix. After forty-eight hours, no living pediculi will be found. Others recommend the use of an iodide of potassium ointment, a scruple or half a drachm to an ounce of lard; or, the rubbing in of a large quantity of calomel at bedtime, one application of which is usually sufficient.]—*Lancet, June* 19, 1858, *p.* 621.

90.—*On Hare-Lip.* By HAYNES WALTON, Esq.,—[A few years ago the operation during infancy for hare-lip was discountenanced by some of our most eminent teachers, but at present new-born babies are successfully submitted to the hands of the practical surgeon. In a case lately operated upon by Mr. Walton, the child was but 6 days old.]

The immediate subject of our report was seven months old, and very thin, as such children always are soon after birth, unless carefully fed by hand. The lip, the hard and the soft palate, were all cleft. One side of the alveolus projected forwards—the usual disposition when this part of the mouth is involved. The case was therefore a severe one, and might correctly be called complicated. Mr. Walton, about ten years since, adopted a plan of dealing with the deranged alveolus, and gave publicity to it in some of the medical journals. Since then, he has repeatedly put it into execution. Heretofore, surgeons either left the projection, when small, untouched, or took it off. His method is to bend it back, by which the cleft in the mouth is more or less, sometimes entirely, filled up, two or more front teeth are saved, and the success of the operation on the lip is rendered more sure. For this, early treatment is required ; that is, before ossification is completed.

Mr. Walton placed the patient's head in his lap (his ordinary way of proceeding with children), while an assistant who sat in front of him held the legs. With a very small scalpel, the lip edges were trimmed by transfixing each from above, and cutting downwards with one continuous sweep in a curved direction; the object of the concavity being to obviate as much as possible the retiring angle which is so likely to remain at the edge of the lip, and which is almost inevitable, except the surfaces be cut elliptically, so that when they come together the lower ends are thrown down. Attention was then directed to the projecting alveolus. An incision was made with a pair of bone-forceps vertically through the thickness of this bony ridge, parallel to the edge of the fissure, and at the spot where the projection commenced, which is usually at the interspace between the first and second incisor teeth. The portion thus partially isolated, and which would generally contain the two front incisors, was then forcibly pushed back, and in this instance it quite filled up the gap. The important process of separating the lip on each side freely from the bone (called by Mr. Walton, transposing), that the edges should be brought readily together without strain, was then accomplished, and the pins applied. Mr. Walton advised his class always to bring the lower part of the wound together first, and then the upper—an arrangement by which the best adaptation is sure to be secured. Only two pins were used, and not any sutures. On the third day, one of the pins was taken out ; and on the fifth, the other.

The little patient was shown in the operating theatre that day week. The most complete union was effected ; and the child bore a very different aspect from that presented but a few days before.—*British Med. Journal, May* 1, 1858, *p.* 345.

DISEASES OF THE EYE AND EAR.

91.—THE PRACTICAL APPLICATION OF THE OPHTHALMOSCOPE.

(FROM DESMARRES' 'TRAITE DES MALADIES DES YEUX.')

By R. TAYLOR, Esq., Surgeon to the Central London Ophthalmic Hospital, &c.

The entrance of the optic nerve in the healthy eye is a very beautiful object, fully justifying the enthusiam of M. Desmarres when he compares it to the full moon on a fine night. It appears as a brilliant, white disc, as nearly as possibly circular, set in a field of orange red. It is probable that it is perfectly on a level with the surrounding structures, though a slight shadow round part of the circumference varying in position with the position of the light, has led some to suppose that it is elevated in the form of a papilla. From a point near the centre spring the blood-vessels. These are very variable both in number and arrangement; but there are generally from six to eight, and they radiate in nearly straight lines towards the circumference of the disc, and thence to the retina, where they may be traced, slightly branching and anastomosing, nearly as far as the *ora serrata*. It is to be observed that they never cross the situation of the *macula lutea*. The veins are known by their being of a darker colour, and rather larger than the arteries. Slight pressure with the point of the finger upon the eyeball developes pulsation in the vessels, and more readily in the veins than in the arteries. In some rare instances pulsation of the vessels is seen in perfectly healthy eyes; this fact I have lately had an opportunity of verifying in a patient under the care of my colleague, Mr. Hulme; in the great majority of cases, however, it indicates disease, and is caused by morbid distention of the eyeball.

The choroid appears, at first sight, of a uniform red colour; but by careful focussing of the ophthalmoscope and lens, numerous irregularly arranged markings, of a dusky hue, are rendered visible. These indicate the course of the choroidal vessels, and are caused by the pigment, which is deposited in greater abundance in the vascular interspaces. The colour of the choroid is rather deeper in persons of very dark complexion, but does not vary much in the white races, so far as I have observed; but in a gentleman of colour (mulatto) whom I had recently an opportunity of examining with my friend Mr. Walton, it was so very dark as to appear almost black.

The retina, being perfectly transparent, is not visible under ordinary circumstances; it is only when the colour of the choroid is unusually deep, that, as pointed out by M. Desmarres, it may be distinguished as a faint, bluish glaze, over the dark surface. The *macula lutea*,

however, ought to be carefully sought for, though few beginners succeed, and even the most experienced observers have often much difficulty in making it out. As it lies directly in the axis of vision, the patient must look straight forwards while it is being sought for. I generally desire him to fix his eye upon the central aperture of the ophthalmoscope. When a good view is obtained we see a dull coloured spot, by no means sharply outlined, on the surrounding red; it is nearly as large as the optic disc, but of an elongated oval shape, the transverse being about double the length of the vertical diameter. In the centre of this spot is a small, brilliant point, supposed by De La Calle to be the *foramen cæcum:* it is very seldom clearly made out. This part of the eye ought to be very carefully studied, and its appearance in health well imprinted on the memory; very slight changes here may produce the most disastrous effects, while much more conspicuous and striking alterations in the neighbourhood of the optic disc may co-exist with a fair amount of vision.

The diseases of the eye upon which the ophthalmoscope has both literally and metaphorically thrown most light, are those of the vitreous humour, the choroid, and the retina—upon that numerous class, in fact, which were formerly scarcely distinguishable from one another, and which were generally confounded together under the vague term *amaurosis;* but before proceeding to them, I would say a few words on the subject of cataract.

Though nothing can be more simple than the diagnosis of a fully formed cataract, or even as a rule, of commencing opacity of the lens, yet everyone who has seen much of such diseases is well aware that cases are far from infrequent in which the diagnosis is a matter of very great difficulty, and in which even the most experienced are liable to commit mistakes. The opacity may exist in such minute striæ, and may be so placed, as for instance, in the posterior marginal fibres, as to elude the most careful search; while there are other sources of fallacy, such as the natural coloration of the lens when carried rather beyond its usual limits, by which less experienced observers are constantly misled. Nor are such mistakes unimportant; upon the surgeon they bring discredit; while upon the patient they frequently entail a course of active treatment which, however serviceable it might be in a case of amaurosis, is useless, often positively hurtful, in commencing cataract. All such doubtful cases can now be cleared up, and the diagnosis rendered perfectly certain, by the ophthalmoscope. For this purpose the convex lens is not required; the light being thrown upon the eye by the mirror, the faintest speck or streak of opacity stands out as a dark mark upon the red field of the choroid, and its situation, whether on the anterior or posterior surface of the lens may be determined by the following rule, laid down by Desmarres. The patient should be directed to throw his head very much backwards; if the opacity be posterior, it becomes concealed behind the lower segment of the iris; if anterior it still remains visible.

In examining the lens, the light ought to be moderate; if very strong, faint opacities are not readily visible against the vivid red of the choroid. Specks of pigment upon the anterior capsule, the results of former inflammation, should be carefully distinguished from lenticular opacities, the prognosis being so totally different. In many cases of easily-recognised cataract, commencing at the circumference, the centre of the lens remains transparent for some time. In such cases the ophthalmoscope affords useful information as to the condition of the retina, and the prospect of good vision after operation.

I now pass on to the deep-seated disease of the eye; and as what follows consists chiefly of a condensation of the views of M. Desmarres, any remarks or illustrations of my own will in future be distinguished by being enclosed in brackets.

Turbidity of the Vitreous Humour.—[I have termed this affection *turbidity*, being unable to discover any English equivalent for the title given to it by M. Desmarres, "Corps vitré jumenteux." Perhaps some of my readers may be able to suggest a more literal translation.]

In inflammations, after effusions of blood, during the presence of a cysticercus in the interior of the eye, &c., the vitreous humour becomes uniformly turbid, and assumes a peculiar appearance, similar to that of the urine of herbivorous animals; a condition invisible by ordinary light, but easily recognised by means of the ophthalmoscope. The light reflected from the instrument, without the aid of the convex lens, shows a general muddiness of the vitreous body; the fundus of the eye no longer presents its normal rosy colour, but is of a reddish-yellow hue, in which, as in any turbid fluid, we discover, on attentive examination, thousands of minute points, rather more opaque than the medium in which they float, whirling in every direction. If we search for the optic disc by means of the convex lens, we may succeed in finding it, but it is seen imperfectly, and has the appearance of the moon when seen through a fog. But everything depends on the degree of opacity of the hyaloid body; in some cases the obscurity is so great that the light cannot penetrate to the optic nerve, in others it is so slight as to require both attention and experience to recognise it. As this condition is only symptomatic, the fundus of the eye should be carefully explored to detect the disease which has given rise to it. It is present in all inflammations of the internal membranes, at all events, at their commencement. In iritis and choroiditis, in especial, the vitreous humour is turbid, and frequently retains ineffaceable traces of inflammatory action in the form of floating filamentous and membranous opacities.

The vitreous body may also become turbid without any external redness of the eye. In sclero choroiditis posterior, effusions of blood, serous detachment of the retina, and cysticercus, it frequently, but not invariably, assumes this peculiar appearance.

This affection is accompanied by blindness, or by more or less impairment of vision. During the progress of recovery, most patients

complain of *muscæ volitantes*. The turbidity may last for several months, sometimes even for a year or more. In general, the little microscopic particles which cause the turbidity, and which appear to consist of albumen, are partly absorbed and partly aggultinated together so as to form filaments or little membranous shreds, which, when the eye is at rest, settle down to the lowest part of the organ; the fundus of the eye can then be seen without difficulty, and the direct cause of the disease ascertained.

The treatment of turbidity of the vitreous humour is that of the disease by which it has been produced.

Floating Particles, and other Opacities of the Vitreous Humour.—The above described condition of the vitreous humour rarely terminates by complete resolution; it generally leaves opacities of various forms. After iritis, perhaps, also after inflammation of the ciliary body, filaments of exudation, sometimes of considerable length, may be seen floating in the anterior part of the vitreous humour. After various diseases of the fundus of the eye also, such as apoplexy of the vitreous body or of the retina, or extensive detachment of the latter membrane by blood or serum, flocculi, filaments, and membranous shreds are seen floating about, like minute fragments of lace or gauze, thrown upwards by rapid motion of the eye, then falling slowly by their own weight, obscuring for an instant a greater or less extent of the pupil, and throwing their shadow on the fundus of the eye. [The mobility of these formations indicates a fluid state of the vitreous humour.]

They are very easily seen with the ophthalmoscope; the patient being desired to move the eye rapidly in various directions, with an interval of rest after each movement, they appear floating past the pupil. Occasionally, with the aid of the convex lens, some are seen which appear to be so heavy that they are only slightly raised by the motions of the eye; others appear to be attached to a sort of muddy material, which floats heavily at the lower part of the corpus vitreum, and, to the naked eye, resembles a detachment of the retina. Floating opacities in the vitreous humour are easily distinguished from opaque striæ in the crystalline lens by their irregular shape and by their continuing to move when the eye is kept at rest after a sudden and brisk motion.

Patients who have floating particles in their eyes generally complain of *muscæ volitantes* of greater or less size, and of feebleness of vision, which depends, as to its degree, upon the disease which has given rise to them. In the greater number of instances, membranous flocculi are present in eyes affected with sclero-choroiditis posterior, a disease very common in myopic subjects, and in cases of apoplexy of the choroid or retina. Some patients can bring them into view voluntarily, by moving the eye rapidly in various directions.

There is no form of treatment applicable to this complaint; local and general alteratives may occasionally be useful. These *muscæ* are

always more troublesome when the tone of the nervous system is at all depressed, and especially when there is indigestion, which seems to have a peculiar tendency to render the retina irritable. These facts should be borne in mind in attempting the palliative treatment.—*Medical Circular, July* 14, 1858, *p.* 13.

92.—ON THE INFLUENCE OF THE CERVICAL PORTIONS OF THE SYMPATHETIC NERVE AND SPINAL CORD UPON THE EYE AND ITS APPENDAGES.

By Dr. John W. Ogle.

(Read before the Royal Medical and Chirurgical Society.)

The main object of this paper was the application to clinical medicine of the various experiments which have from time to time been performed, as showing the influence possessed by the sympathetic in the neck and the upper part of the spinal cord upon the iris and upper eyelid. Experiments and dissection as regards the lower animals have shown that the curtain of the iris, containing as it does two sets of muscular fibres, a circular set by which the pupil is contracted, and a radiating set by which it is enlarged, is under the domination of two separate and distinct sources of innovation. The third cranial nerve is found to control the circular or contracting fibres, and the sympathetic, by virtue of communications with the lenticular ganglion, is found to control the dilator or radiating fibres. Hence if the influence of the third pair be destroyed, the pupil becomes dilated, inasmuch as the dilator fibres, those presided over by the sympathetic, are unopposed; again, if the influence of the third cranial pair be left unimpaired, and that of the sympathetic be destroyed by section or extreme pressure, then the pupil becomes contracted. The author dwelt upon the history of the various experiments upon which the above statements are made, and also upon those from which it is concluded that in certain parts of the spinal cord resides the power or influence which acts upon the dilator fibres of the iris passing to that structure through the sympathetic, viâ the roots of certain cervical and dorsal nerves. From these latter it is apparent that the same paralysis of the dilator fibres of the iris which follows section of the sympathetic in the neck, follows also the severance of such fibres as connect the sympathetic with the spinal cord, as also the section or destruction of the spinal cord itself in certain parts. Accordingly it might naturally be expected that any cause of extreme pressure acting upon the various portions of the nervous system before alluded to would, as in the various experiments before adduced, cause a contracted state of the pupil on the side corresponding to that on which the extreme pressure existed. And thus it was that Dr. Gairdner, of Edinburgh, first sought to explain those cases

in which, along with an intra-thoracic aneurism, a contracted state of the pupil coincided. These cases of his were detailed, several of them not having been hitherto recorded, and to these others were added of his own observation, as well as some from other sources. Cases were next given in which pressure from aneurism upon the sympathetic in the neck had produced contraction of the pupil. In the third place, instances were adduced in which extreme pressure from other causes than aneurisms had produced a like effect upon the pupil, as in the case of enlarged glands, carcinomatous deposit, &c. In the fourth place, bearing in view the intimate connection between the sympathetic main branches in the neck and the cervical part of the spinal cord, he drew attention to several cases in which a contracted pupil had been observed in injuries of the spinal cord itself. But in addition to a contraction of the pupil as brought about by section of the sympathetic, spinal cord, &c., as before spoken of, experimenters have also found that irritation or galvanism of the same parts of the nervous system will bring about a dilatation of the pupil, and that this dilatation may be effected even when section or extreme pressure has already given origin to contraction of the pupil. Accordingly, in these physiological facts an explanation was sought of certain cases in which pressure from aneurism, diseased products, &c., appeared to produce, not a contraction, but a dilatation of the pupil in man; and he instanced, in the fifth place, several cases in which the pressure from various sources was, inestimably so much in extreme as to be, in fact, a source of irritation or stimulus, acting in the same way as it was found in animals, that any stimulus, mechanical, chemical, or galvanic, would act upon the sympathetic. In no other way could he explain the dilated state of the pupil which existed. But besides the above-described effect upon the pupil of the eyes, in enumerating the various experiments in which the sympathetic, &c., was divided, special attention was drawn to a dropping of the upper eyelid, or ptosis, which, on several occasions was observed. This phenomenon was explained on the supposition that along with the sympathetic fibres to the iris, those to the third cranial pair are also paralysed, and hence the levator of the upper eyelid, which is supplied from the third pair, is deprived of power to a greater or less degree. One or two cases were also adduced in which ptosis of the upper eyelid was observed in connection with pressure about the neck, from aneurism of other sources. He offered the same explanation of the convergent strabismus which, in the hands of certain experimenters, was, along with other results, found to depend upon a division of the sympathetic cord in the neck. He supposes it to have existed by reason of paralysis of such fibres (in several animals, five or six in number) as pass up to join the sixth cranial pair of nerves, by which the power of this muscle becomes weakened, and its action counterbalanced by the internal adductor muscle.—*Med. Times and Gazette, July* 24, 1858, *p.* 100.

93.—SYMPATHETIC INFLAMMATION OF THE EYEBALL.

[Where an eye hitherto sound has become weak and inflamed through sympathy with the one which had been previously injured, it can be rescued from destruction in no other way than by getting rid, speedily and conclusively, of the abiding source of irritation. This can be effected in two ways—by cutting off the fore part of the eye, and evacuating the humors, or by removing the inflamed eyeball completely, after division of all its muscles. The following illustrative case is interesting:]

W. F., a stout, healthy young man, from Montrose, was struck accidentally with a stick upon his right eye, about six years ago. The organ was severely injured at the time, and has been a continued source of suffering and discomfort ever since. The following was its condition when he applied for advice at the Eye Infirmary:—The pupil was widely dilated, and occupied by a milky capsular cataract; the iris, although bright and healthy in colour, had lost its tension, and oscillated with every movement of the globe. There was slight vascularity of the white part, but the cornea was perfectly healthy and transparent. Vision was nearly gone, and great irritability and tendency to lachrymation were exhibited upon every attempt to expose and examine the eye. For several months back, the left or sound eye had sympathised more or less with its fellow, and latterly, besides being weak and irritable, also had become affected with a progressive dimness or imperfection of sight. In consequence of these alarming symptoms, he had wisely abandoned for a season his occupation as a plumber, which indeed he was little able to follow, and now applied for medical aid.

It seemed very probable, considering the obstinate and prolonged nature of the case, that complete removal of the injured eye would be the only effectual remedy for the amaurosis which was threatening the other; but as the cornea and iris were both healthy, we determined, in the first place, to try the effect of extracting the crystalline lens, and so giving the organ an opportunity of subsiding into a quiet condition, on the complete evacuation of the aqueous humor. A section of the cornea was made in the usual manner, and the opaque capsule being opened, the lens came away *clear as glass and perfect.* Contrary to expectation, however, the hyaloid membrane remained entire, no vitreous humour escaped, and the flap of the cornea being laid down, the wound speedily healed, with a resecretion of the aqueous humor. No material benefit followed the operation; the pupil was now clear, but vision underwent little improvement, and, which was more vexatious, the eye continued weak and irritable as before.

There could be no doubt now as to the propriety of removing the entire globe. It was accordingly done, under chloroform, by dividing

the muscles successively, in the manner recommended by Dr. Ferrall; and the result was most satisfactory. The left eye being no longer exposed, through its sympathy with the other, to an abiding source of irritation, speedily recovered its original strength and perfection of sight, and our patient was able to resume with comfort his former avocations. He wears an artificial eye, which is sufficiently supported by the textures still remaining in the orbit, and follows, better than could be anticipated, the movements of the other eye.—*Edinburgh Medical Journal, July* 1858, *p.* 36.

94.—LARGE VASCULAR TUMOUR OF THE ORBIT, TREATED BY INJECTION OF A SOLUTION OF TANNIN.

By R. Taylor, Esq., Surgeon to the Central London Ophthalmic Hospital.

[The case was one of congenital vascular tumour of the left orbit, in a young woman, aged 24.]

The eye was displaced upwards and somewhat inwards, and was protruded so that the cornea was nearly on a level with the bridge of the nose. By gentle pressure it could be restored to nearly its natural position, the tumour at the same time projecting at the lower and outer part of the orbit; when the pressure was removed, the eye was again slowly protruded. There was no discoloration of the skin, nor any pulsation in the tumour. Immediately above the cornea, two small conjunctival veins were dilated into pouches about the size of a partridge-shot. The appearance of the eye was natural, but the sight was very imperfect. She declined submitting to any operation.

She again came to the hospital in March, 1857, the tumour having, without apparent cause, commenced to increase rapidly in size. The conjunctiva was inflamed, the eyeball became daily more and more prominent, and she suffered severe pain in the orbit, darting through to the back of the head. On the upper eyelid, near the margin of the orbit, was a tumour about the size of a horse-bean, which had begun to appear a few months previously. It was tense and elastic; it could not be emptied by pressure; and the skin over it was of a dusky purple colour.

The necessity for treatment was now evident, but the difficulty lay in the selection of the proper means. The growth extended to an unknown depth in the orbit, completely surrounding the eyeball, which was, as it were, imbedded in it. The method of injection appeared to be the only one admissible, but I hesitated as to using the usual solutions employed, from the violent inflammation and sloughing which they sometimes occasion, and which in such a situation as the orbit, might be followed by destruction of the eyeball, and might even endanger life.

At this time I had frequent opportunities of watching the progress of a case of a similar nature, the particulars of which have been recently laid before the Medico-Chirurgical Society by my colleague Mr. Walton. The injection which he employed in this instance was a solution of tannin, and the result was so satisfactory that I determined to adopt his method, and accordingly injected half a drachm of the saturated solution, by means of an Anel's syringe, through a puncture in the most prominent part of the tumour, between the lower lid and the eyeball.

Smart inflammation followed, with a good deal of pain and swelling, but there was no constitutional disturbance; nothing further was required than the application of iced water to the part, and there was no suppuration subsequently. During the height of the inflammation, the growth on the upper lid increased considerably in size, and became very tense; I therefore made an incision into it, and found that it was a cyst containing turbid serum, and having dense, leathery walls, extending deep into the orbit. I succeeded in removing the greater part of the cyst, but a small portion extended too deep to be reached with safety. When the inflammation subsided, all of the tumour which could be felt was found to be completely consolidated; the eyeball was uninjured, but it was fixed and immovable. It is unnecessary to detail the further progress of the case minutely; it may suffice to say, that when I last saw her, about nine months after the operation, the eyeball had assumed a more natural position than it had ever had within her recollection, and that absorption of the tumour was still progressing. The movements of the eye in every direction were perfect, and the vision, such as it was, was unimpaired.

I have reported this case in the hope of inducing others to test the efficacy of the injection which Mr. Walton has proposed as a substitute for the perchloride of iron and the other injections usually employed. The violent inflammation and sloughing which occasionally follow the use of these agents, are probably caused by the free acid which they contain, and which destroys the tissues with which it comes in contact. In other parts of the body, such excess of action may not be of much importance; but in the orbit, where the relations of the morbid growth cannot be accurately ascertained, and where, as in this case, it may completely surround the eyeball, the case is different. Violent inflammation would endanger the safety of the eye, and might even extend through the optic foramen to the brain, while sloughing, to any extent, would be followed by deformity from distortion of the eyeball or lids. It is therefore a matter of great importance to be provided with an agent which, while it induces a moderate amount of inflammation, is not liable to destroy the tissues with which it comes in contact. That tannin is capable of fulfilling these conditions, appears to be probable. Much more experience is requisite before we can form any positive decision as to its merits; but the result, in both the instances in which it has been employed, has been

sufficiently favourable to warrant a more extended trial of its effects, as well in tumours on other parts of the body, as within the orbit.—*Lancet, May* 22, 1858, *p.* 502.

95.—*On the Use of Tannic Acid in Nævi.* By HAYNES WALTON, Esq.—[Mr. Haynes Walton has also used tannic acid in the treatment of vascular tumours. He says:]

The strength of the solution used by me is in the proportion of a drachm of the acid to an ounce of water. This amount of water will dissolve more than two drachms of acid; but I should not like to employ so strong a preparation; I think therefore that a saturated solution is objectionable.

I do not consider that my plan is preferable to all others, but suitable and superior in the cystic and the subcutaneous varieties of nævi. Further investigation may induce me to extend it to other instances, but I still tie and cauterise some of the superficial forms of the disease.

My method of proceeding is this:—I make an aperture at the circumference of the tumour, with a knife that will not make a larger hole than the nozzle of the syringe requires. I have always used one of my smallest sized iris knives. Sometimes when I think it beneficial, this depending on the greater density of the mass, I move the needle about so as moderately to cut the interior in several places, that the injection may traverse sufficiently freely.

My syringe is a metal one, holds about an ounce, and has a long and fine point. Mr. Fergusson, the surgical instrument maker of Giltspur-street, Smithfield, has made several of the kind.

When practicable, I think it well to empty the nævus by pressure before injecting, and then gently to distend it. All force is improper, as it risks extravasation. Commonly a few days after operating a darkish coloured discharge issues from the point of puncture. Less frequently nothing of the sort ensues, but the coagulated blood is gradually absorbed.—*Medical Times and Gazette, June* 12, 1858, *p.* 612.

96.—*Mr. Dixon's Method of Excising the Eyeball.*—[Mr. DIXON'S method of excising the ball, though similar in plan, differs in some of its details from that practised by his colleagues.]

Mr. Critchett, to whom the credit is due of having been the first to supersede the old and most clumsy method with the scalpel by the admirable operation now in general use, employs the strabismus hook and scissors in the dissection. Mr. Dixon has for some time past dispensed altogether with the hook, and employs curved instead of straight scissors. The wire speculum having been introduced, the

conjunctiva, elevated by dissecting forceps, is divided all round at the margin of the cornea with scissors curved on the flat and slightly rounded at their points. The tendon of the external rectus and the adjacent areolar tissue are next seized in the forceps and snipped through. An assistant now fixes the globe and draws it forcibly inwards by holding in forceps the insertion of the just divided muscle, and the superior rectus, the oblique and the inferior rectus, are in order snipped through. The globe now starts forwards, and the optic nerve having been easily reached and cut through, it is turned hind part before, and a few more touches suffice to divide the last remaining muscle, and to complete the operation.—*Med. Times and Gazette, Oct.* 2, 1858, *p.* 346.

97.—ON AN IMPROVED METHOD OF EXTRACTION OF CATARACT.

By JOHN F. FRANCE, Esq., Ophthalmic Surgeon to Guy's Hospital.

[A good position of the cornea and steady condition of the globe greatly favour the accomplishment of an adequate section and the preservation of the iris from injury; and casualties during the operation are mainly attributable to the control by the unaided fingers being deficient.]

For many years I have been accustomed to steady the eye during extraction by the contact and pressure of the fingers alone, according to the practice of most modern operators; the forefingers holding the upper lid, and restraining the globe's movement upwards, the middle finger on the caruncle curbing its movement inwards. In many cases this arrangement is sufficient for the purpose, and the section is made not only satisfactorily but with ease. In how great a degree, however, the case is dependent on the patient's strength of nerve and steadiness of eye; and how limited the surgeon's real command of the globe is apt to prove, when the opposite qualities are manifested (especially if the anatomical conformation of the parts happens at the same time to be unfavourable), every operator of wide experience and equal candour must confess. Can no unobjectionable means then be devised which shall render his command absolute?

In operating for the formation of artificial pupil I first became aware of the practicability of holding the eye perfectly still and motionless, or as nearly as possible, by the mere application of artery forceps. The idea at length was suggested of extending the use of this instrument to another operation, in which, as far as I know, it had never been employed, (at least in this country,) before; of availing myself, in short, of the same resource as in cases of artificial pupil (and with a similar object) in cases of extraction.

I have since brought the idea to the test of experience, with the

result which it is my present object to make known,—the result, that is, of facilitating in a degree I could not have anticipated, the most critical stage of this operation. The mode in which I proceed is as follows. As soon as the patient is laid on the operating table and all the preparations are complete, standing at his head, I apply the extremity of the forceps with rather firm pressure a little beneath the inferior margin of the cornea, and clasp a somewhat broad portion of conjunctiva and of the submucous fascia securely. Then, taking the instrument between the finger and thumb of the other hand, as near as practicable to its closed points, I deliver it to the assistant; whose hand, supported upon the patient's cheek, receives it, and holds it as he would a pen. It is well that the assistant should be practised in his share of duty on the dead subject. The ordinary artery forceps are, on the whole, preferable to those with a spring catch, commonly known as Liston's; but it is of consequence that the nibs should be broad, and the teeth sufficiently prominent. The lower lid requires no further depression than that necessarily produced by the attachment of the instrument to the ball in this way. I then raise the upper lid with the fore-finger, direct the assistant to draw the cornea into a central position and retain it there with the forceps, place my fore and middle fingers on the globe in the usual way, and thus perfect the command of the organ. On now making the section, the eye is found steady and motionless; the knife can be deliberately entered, deliberately carried across the chamber, and deliberately brought out on the inner side of the cornea; and counter-punctuation being fully effected, and the flap on the verge of completion, the object of the forceps is accomplished, and they are at once disengaged. The remainder of the operation is finished in the ordinary manner.

I have had much experience in the operation of extraction, having performed it myself considerably upwards of a hundred times; and of course am familiar with its pleasures (so to speak), and its difficulties, its contingent casualties, and the sequelæ of embarrassment attending them. After one or two trials, therefore, I was in a position to estimate the amount of advantage gained by the accessory manipulation just described; and this has proved indisputably so great, that I have employed the forceps without exception ever since.—*Guy's Hospital Reports, Vol. IV.*, 1858, *p.* 92.

98.—FALLACIES IN THE DIAGNOSIS OF CATARACT.

By Dr. J. Birkbeck Nevins, Surgeon to the Eye and Ear Infirmary, Liverpool.

The diseases which are likely to simulate cataract so much as to occasion real difficulty to the surgeon in general practice are not numerous, but they are sometimes sufficiently perplexing. They are *amaurosis, accompanied by a milky or opalescent colour of the con-*

tents of the eye which is very common, and frequently occasions considerable difficulty; *the presence of a very thin, partly opaque membrane, filling up the pupil*, which is almost always small and irregular, though this irregularity is often so slight as to be unobserved during a mere casual examination; *the early stage of glaucoma*, and the presence of *a slight central opacity of the cornea, accompanied by a progressive condition of amaurosis.* These will be found in practice to be the chief difficulties, and they are all met by the same general management.

In the advanced stage of any one of them the symptoms are generally so well marked as to present little difficulty to the surgeon, even though he may not have paid special attention to ophthalmic surgery; and we shall therefore confine our remarks to the diagnosis of the early stages, when some difficulty is often experienced. A very simple precaution at the outset will frequently set aside all doubt, and at once declare the nature of the case; and it is so easy of application that it ought never to be omitted previous to giving an opinion in a case of uncertainty. The light from a sunny window should always be thrown upon the eye by a common large double-convex lens, and the increased distinctness of vision thus obtained by the examiner will often reveal the presence of a slight central opacity of the cornea, which has been the cause of the loss of sight, and will show the eye clear and transparent behind the pupil. One of the most diagnostic symptoms, present in genuine cataract, is the increased amount of vision towards evening, when the pupil dilating naturally the light is enabled to pass round the margin of the opaque lens; but this symptom is also present in central opacity of the cornea, and therefore excites a strong suspicion that cataract is present, until the cause is rendered manifest by the bright illumination of the cornea, which makes even the most indistinct opacity clearly evident. A similar advantage is gained in the case of a false membrane filling up the pupil. This is frequently so thin and so slightly different in colour from the natural pupil that it is only rendered visible by a concentrated light being thrown upon it, which not only reveals the slight opacity of the membrane, but also shows that the pupil is immoveable in consequence of an effusion of lymph, which has probably been the result of some previous rheumatic affection of the eyes. This form of disease, which is sometimes called "spurious cataract," is always to be feared in rheumatic ophthalmia, and ought to receive the most unremitting attention of the surgeon for its prevention.

The opacity of the lens or its capsule is sometimes too slight, even in genuine cataract, to be readily distinguished by the unaided eye, though it is rendered unmistakably distinct in the concentrated light; and this is therefore another advantage of the simple plan here described; but as the disease may be very slightly advanced, or indistinct from other causes, we must have recourse to other aids in our diagnosis. It is never wise to express an opinion in a doubtful case, until the pupil

has been fully dilated by belladonna, or, better still, by atropia, and has then had the concentrated light again thrown upon it. In the case of the spurious cataract above described, the membrane does not always adhere uniformly to the whole margin of the pupil, and portions of it will therefore dilate whilst others remain fixed, and an irregular outline of the pupil is the consequence, revealing the true nature of the disease. It also happens in many cases that the opacity of the capsule in true cataract commences at the margin of the lens, and is rendered distinctly visible when the pupil is dilated, though it is quite invisible whilst the pupil is in its ordinary condition.

When the pupil is perfectly dilated, the practical fallacies then existing arise from a milky condition of the vitreous humour with some degree of amaurosis, or from an early stage of glaucoma. Neither of these diseases is, however, bounded by a distinct margin, but they extend throughout the contents of the globe, and no marginof an opaque body can be traced within the eye such as is seen in the case of an opaque lens. Sometimes, however, the lens is so large, and so fully occupies the pupil, that no margin can be seen even here, on looking at the eye in front; but on turning the patient sideways and partially shading the eye by holding the observer's hand edgeways in front of it, the margin of even the largest lens can generally be seen behind the pupil; and this simple manœuvre will effectually distinguish many cases of doubt. But there are many still in which greater certainty is desired, and there is then no test of equal value with Sanson's catoptric test, when this is properly applied, and the observer knows what he has a right to expect to see. As commonly described, this test is, however, likely rather to confuse than to assist the surgeon who has only occasional opportunities for using it; though when properly employed it is easy of application and of the greatest possible value.

In the first place, the observer must be on his guard that he does not expect to see too much. It is usually said that when the lens is transparent there is a bright erect image from the cornea, and another erect image from the front of the lens; and lastly, that there is an inverted image reflected from the posterior surface of the lens; and the surgeon therefore naturally expects to see two erect images in a healthy eye, and one inverted one. Now the fact is, that he will scarcely ever be able to detect the second erect image if the eye is sound, and it will require no small care to find the inverted one at all; and even when found, not one observer in twenty can see whether it is erect or inverted. What may be really looked for is the following. When the room is darkened, and the pupil widely dilated by atropia, the flame of a clear, bright burning taper should be held as near the eye as can be done without giving pain, and a bright erect image will be seen without any difficulty. If, however, the observer looks with great care into the pupil, and keeps moving the taper about, he will at length discover an *extremely small spot* of pale light,

which will move in the opposite direction to the candle. If this is carried to one side of the eye the minute speck of light moves to the opposite side. If the flame is raised the speck descends, and if the candle is lowered the image ascends; and by this means the observer at length gains certainty that it is an inverted image he is looking at; but he will probably never recognise the difference between the base and the apex of the flame in the image, and as there is no visible reflection whatever of the candle itself, he will have nothing to guide him as to its erect or inverted character except the direction of its motion being opposite to that of the taper itself. So long as the lens and its capsule remain transparent this inverted image may be discovered, and accordingly we shall decide upon the absence of cataract when it is present, and shall have no doubt of the existence of an opaque lens or false membrane if it is absent.

This is all that we shall generally see if the eye is healthy; but if glaucoma is present or the vitreous is becoming milky, we then can see the second erect image, very pale and indistinct, and looking more like a ghost than a candle, behind the first bright erect one. This second image is somewhat larger than the first, so as to extend beyond it in every direction; and it is so pale and indistinct that it is generally only recognised as being erect by its moving in the same direction as the candle. If then the inverted image is seen without the second erect one, we are sure that there is no cataract, and the tissues are healthy; but if the second erect image is tolerably distinct, it is evidence of some morbid change going on in the structures of the eye, though not of a cataractous nature.—*Liverpool Med.-Chir. Journal, July*, 1858, *p.* 203.

99.—MR. CRITCHETT'S NEW OPERATION FOR DISPLACING THE PUPIL.

[At p. 439 of our last volume, we noticed Mr. Critchett's new operation for artificial pupil,—the details of the operation are now given.]

At first mention, the idea of drawing out a fold of iris tissue in such a manner as to leave the pupillary margin itself free, and of then securing it from return by the application of a ligature, may not sound like a very practicable one. That it is easily so has been fully proved by the practice not only of Mr. Critchett himself, but of more than one of his colleagues. As stated in our former notice, the cases for which this mode of operating is especially required are those in which a limited leucoma constitutes the hindrance to vision, and in which the pupil is free from adhesions. We will suppose such a case on the operating couch. The steps of the operation are then as follows:—With a broad needle an incision is made through the edge of the cornea at the side selected, just large enough to admit of the introduction of the cannula forceps. The latter instrument is then passed

into the anterior chamber, and made to seize the flat surface of the iris, at a distance of about a third of the breadth of the cornea to its pupillary border. The iris thus doubled on itself is drawn out of the wound. With another pair of forceps, ready armed with silk, the operator now seizes the prolapsed portion, upon which the ligature is next placed, and tied by his assistant. In tying it two pairs of broad-pointed forceps must be employed, instead of the fingers, and some delicacy is required. The instrument here shown is the forceps which

Mr. Critchett has had made for the purpose of holding the prolapse during the application of the ligature. The blades are broad and well bowed, so as to throw off the ligature easily, and for the purpose of retaining it during their application a slender steel leg is fitted on each, the points of which, although just in contact, are of course not united to them. The silk used should be fine, but soft, and not tightly twisted. After being tied, both ends may be cut off close. There does not appear to be any tendency to draw the prolapse in again; indeed, the peculiar way in which the folds of iris are secured by the ligature prevents any traction being exerted in a direct line inwards. The ligature usually drops off in a day or two, and the wound rapidly heals. As far as we have observed Mr. Critchett's cases, singularly little irritation follows the operation.

A case of conical cornea in a young woman under Mr. Bowman's care, in which it was desired to make a narrow elliptical pupil in each eye, afforded a very instructive contrast of the new plan with that of cutting out a portion of cornea. Mr. Bowman operated on the left sides of each eye on the same day, in the one adopting the ligature plan, and in the other cutting away a small portion of the cornea, and leaving the iris to prolapse, and acquire adhesions to the cicatrix. In the latter, the wound was long in healing, and was attended by very much more of surrounding inflammation. In operating on the right sides of the two eyes, a fortnight later, Mr. Bowman employed the ligature in each, and was much pleased with the result. Indeed, the wound made by cutting out of cornea on the first occasion was not soundly healed until some time after the whole of the other three.

It is to be observed that the method by cutting out a little bit of cornea is almost the only one which aims at exactly the same result as Mr. Critchett's, *i.e.* the displacement of the normal pupil, not the making (by laceration or cutting) of a new one. In most of the others the iris is seized at its pupillary margin, and its structure lacerated, or if no pupil exist an entirely new one is made by a cutting needle. The advantages in all cases where possible of leaving the pupillary border uninjured has long been acknowledged, and its supposed

impracticability alone prevented its being much more frequently adopted. If in the attempt to apply a ligature to the iris in the manner above described, the surgeon should, as will sometimes happen, be unable to limit the amount of prolapse, and include it in the margin of the pupil, he has but converted his operation into one of the old kind, and has only defeated one part of his purpose.—*Med. Times and Gazette, June* 12, 1858, *p.* 601.

100.—OPHTHALMIA OF NEW-BORN CHILDREN TREATED BY CHLORIDE OF ZINC AND GLYCERINE.

By Dr. Angus Macmillan, Hull.

Case.—A child seven days old. On examination eyelids very much swollen and glued together; on opening thick white fluid escaped from both eyes. Inside of the eyelids of the right eye very vascular and considerably swollen, so much so as to render the examination of the cornea very difficult, at lower margin of which a small white spot as if pus were effused between the lamellæ of the cornea was observed. General haziness of surface of cornea also present.

The left eye presents cornea clear, conjunctiva vascular, purulent discharge thick and very copious.

The chance of recovery of right eye was held out to the parent as extremely doubtful. The following drops to be applied three times a-day by the aid of a camel-hair brush:—Five grains of chloride of zinc to be well triturated in a glass mortar, with half an ounce of glycerine. During the day frequent ablutions of the eyes and application of pure glycerine.

On the following day the mother states that the child had rested better during the night; the discharge of matter was much less, the swollen condition of the eyelids had decreased considerably, and the right cornea was easily exposed to view; onyx still present, as also haziness of cornea.

Next day much improved; child opens her eyes and looks about; still some purulent discharge; onyx of right cornea considerably less; surface of cornea much clearer; inner surface of eyelids less vascular; continue the application and sulp. quinine $\frac{1}{4}$ maneque nocteque.

Seen two days after; eyes all but well; onyx in right cornea completely gone; little or no discharge; general appearance and health of child much improved. Discontinue the application of the chloride of zinc, but apply occasionally during the day a little glycerine by the aid of a brush.

Many cases attended with a similar result might be brought forward, but the above will be sufficient to direct attention to the employment of chloride of zinc.

It cannot be denied that the strong solution or nitrate of silver is generally quite sufficient to cure this disease when had recourse to,

even in the more advanced stages; but its employment is attended with two or three disadvantages.

In public and private practice it is too frequently found that this disease is neglected or treated with some useless remedy, as a little of the mother's milk, simple cerate, &c.; and that the little patient is brought to the medical attendant after the lapse of two or three weeks, at which period, to use the words of that eminent surgeon, Dr. Mackenzie,—"I open the lids of the infant with the fearful presentiment that vision is lost, and but too often I find one or both of the corneæ gone, and the iris and humours protruding. In this case it is our painful duty to say there is no hope of sight."

Let us suppose that the case is not quite so bad, that the symptoms and conditions of the parts are similar to the case narrated, that an onyx is formed on the eve of bursting, a little delay and loss of vision is inevitable; you order the nitrate of silver to be applied to the eyes every six hours; you urge upon the parent the necessity of washing the purulent discharge from the eyes, and request her to bring the child on the following day. She does so. On examining the eyes you find little or no improvement, in the majority of cases decidedly worse: you are surprised. On cross-questioning the parent or nurse, you will find that the drops have not been applied; that the child cried so much, appeared in such agony; that a few drops were spilt on the child's cap, or other portion of its dress; that the characteristic stain of the nitrate was observed; that some busy neighbour, not unfrequently the one who treated the child's eyes before it was brought to the medical attendant, and glad to supplant him in the confidence of the parent, says it is "caustic," the "Doctor is going to burn the eyes out," &c., &c. The poor mother, ignorant of the true state of matters, and moved by maternal affection, hesitates, and ultimately resolves not to repeat them, the consequences of which may be easily conceived, the little time for a chance of cure has past, the sight, perchance, of both eyes is gone, and the one application has sufficed to establish the medical attendant's reputation for "burning eyes out."

Go to any dispensary, ask the parent of that child with staphyloma how the child lost its sight, the answer in nine cases out of ten will be the following: "A blast of cold shortly after birth, and the doctor burnt the eyes out with caustic."

Now, in the chloride of zinc with glycerine, we have a remedy as effective as the arg. nit., and not attended with such disadvantages. It would appear that the use of glycerine alone has a beneficial effect as a lubricant, and at the same time diluting the purulent discharge, and consequently diminishing its irritating effects on the adjacent parts. Not a few cases observed at the first day or so have been cured by the use of glycerine alone. I hope at a future period to be able to give some results of its use in the treatment of gleet, for which I have no doubt it will be of service, seeing that the disease and the parts implicated are very much alike in both cases.—*Med. Times and Gazette, July* 3, 1851, *p.* 7.

101.—*Application of Sugar when Lime has entered the Eye.*—The 'Indicateur de Mayence,' in relation to cases of workmen becoming blinded by the action of lime which has entered the eye, recommends as a well-approved application in the case of such accidents, a strong solution of sugar, which is to be inserted drop by drop under the eyelids. This application can usually be immediately obtained, and completely prevents the caustic action of the lime.—*Journal de Chimie Méd.—Med. Times and Gazette, Sep.* 18, 1858, *p.* 304.

102.—ON GROOVING THE FIBRO-CARTILAGE OF THE LID IN CASES OF ENTROPION AND TRICHIASIS.

By J. F. Streatfeild, Esq.

The treatment of these cases has always been peculiarly surgical, and the very old established practice of *excision of an oval piece of skin* is so simple that it is tried in many cases of entropion and trichiasis, in which it does not at all answer the desired purpose. That it is open to improvement is proved, as I conceive, by the variety of methods of cure which have been since proposed and adopted at different times, but none of which are so much employed as that which they have been intended to replace.

Disadvantages of other Operations.—It appears to me that the operations hitherto adopted are not generally so successful as that by which I have lately attempted the cure in cases presenting similar appearances to those in which the lashes have been pulled out, or their roots extirpated; the edge of the lid, including the distorted lashes removed; or, portions of the skin of the lid or orbicularis muscle excised. I shall not consider the success that has attended any operation in the first section involving loss of the eyelashes, as it substitutes for the disease of the eyelids such a deformity that the ill-result is only qualified by the actual danger implied by inverted lashes, but patients have been well contented to be thus disfigured in order to gain relief from suffering, and lose the fear of blindness. The same undeniable objection holds to the usual operations in the second section, besides that the unevenness of the margin of the lid after these operations is often sufficient to perpetuate the ill-results of the long contact of the lashes. The removal of a V-shaped portion of the lid can only be employed in exceptional cases. In the plan of the third section, the removal of some skin and muscle is, as I have said, frequently ineffectual; even in the cases of patients permanently thinned by old age, in which it is best employed, it is very liable to failure, although apparently enough may have been taken away at the time, because of the excessive pliancy of the skin to which this operation refers for cure of the inversion.

The skin of the lid is very loosely connected with the subjacent cartilage; if it were closely adherent this operation would be probably

an unfailing remedy in some cases, for it has been most successful when the portion excised has been taken from close to the palpebral margin and has included a portion of all of the lid that is external to the cartilage.

Basis of the new Operation.—Considering the nature of cases of entropion and trichiasis as far as they are associated, and the incomplete success of their present surgical treatment, I have adopted a new operation of which I can say that excepting some cases for which it is not adapted, and which may be identified, its success has already been marked. I anticipated for it some advantages, chiefly as I have observed after deep wounds of the scalp, *with loss of substance,* when the occipito-frontalis has become adherent to the pericranium, that a *firm and depressed* cicatrix is formed, which limits the action of the free portion of the muscle to the boundary of the scar, and that the growth of the hair, at this part, is directed *towards* it.

Method of Operating.—The operation has been performed thus: The lid is held with Desmarres' forceps, the flat blade passed under the lid, and the ring fixed upon the skin so as to make it tense and expose the edge of the lid. An incision with the scalpel is made of the desired length, just through the skin, along the palpebral margin, at the distance of a line or less, so as to expose but not to divide the roots of the lashes; and then just beyond them the incision is continued down to the cartilage (the extremities of this wound are inclined towards the edge of the lid): a second incision, farther from the palpebral margin is made at once down to the cartilage, in a similar direction to the first, and at a distance of a line or more, and joining it at both extremities: these two incisions are then continued deeply into the cartilage in an oblique direction towards each other. With a pair of forceps the strip to be excised is seized and detached with the scapel.

Desmarres' ring-forceps ("pince-anneau") should be of large size; it entirely prevents the troublesome bleeding of minute operations on the eyelids. A small scalpel I have found the most convenient knife for this operation. The forceps with which to hold firmly the cartilage, &c., to be removed, should have slender *toothed* extremities.

When the ring-forceps is removed, I make use of pressure with a sponge and cold water to arrest the bleeding, and cold water dressing is continued afterwards, and the eye kept closed.

Advantageous results.—I have not found the fibro-cartilage at all disinclined to heal. A practical object attained by the excision of some portion of the skin and muscle is, that the wound is less inclined to union by the first intention, for by a slower process, a cicatrix is obtained firmer, deeper, and more depressed than by immediate reunion of divided parts. Therefore, also, I employ no plaster or sutures, such as are perhaps required after other operations on the eyelids.

The strip corresponding to the extent of the disease being removed, cicatrization follows in the track of the wound, and by its contraction

approximates the opposite cut surfaces of the cartilage, diminishing more and more the interval of the loss of substance, which, when the groove was made in the cartilage, formed an angle of from 90 to 45.° The strip is triangular in section, its apex towards the conjunctiva and its base (including all parts of the lid external to the cartilage) at the skin. The narrow portion of skin, limited by the first and second incisions, is removed not with any intention of thereby rectifying the distortion, enough for this purpose is never included, but it facilitates the operation, and some skin of the lid can always be spared, from that very extensibility which makes it not to be depended on to correct the deformity; and, as I have said, such a wound is less ready to heal than of parts simply incised and recently continuous. Some "ciliary" muscular fibres being removed with the strip, and the extremities of the incision being "inclined towards the edge of the lid," *the marginal portion of the orbicularis is isolated and involved in the cicatrix*, and its abnormal influence arrested or prevented.

The first characteristic of this operation is that the *eye-lashes are preserved, and made to take a right direction*, and its chief importance consists in the *implication of the fibro-cartilage*, which gives form to the normal lid, and which, therefore, I have thought, should have given to it another shape, when its distortion is such as to invert the lashes, and endanger the soundness of the eye, which should be protected by it.

Comparative Advantages of the Operation.—Thus it appears among the comparative advantages of this mode of operating, that it does not substitute a deformity for the disease, and it preserves the integrity of the margin of the lid. I should also say, that it is with few modifications and exceptions, applicable to a great number of cases; and it is essentially a radical cure, and involves no tedious treatment.

The operation and subsequent cicatrization being completed, a firm band is established at a short distance from the defined margin of the lid, which in a secondary degree to the margin itself, tends to preserve and confirm the right shape and position of the lid, much as the binding near to the edge of a window-curtain conduces to its regular form. Some cases have reference to the marginal folds of the skin of the lid, which may be seen in old persons, and after tinea ciliaris, or ophthalmia, when secretions have dried on the edge of the lid; these folds cannot occur after this operation, and if the areolar tissue of the lid becomes infiltrated, the effusion cannot extend to its edge, but is limited by the scar. The loose skin of the lid and ciliary muscle altogether take a new bearing, and are only able to act from the line of cicatrix, not from the palpebral margin, and concede a certain width of border that guarantees the right position of the lid.

In cases of entropion or of trichiasis, "grooving" serves another purpose, similar in either of them, but efficient in different ways; the cicatrization produces a slight contrary eversion of the *edge* of the lid, this it is evident must affect a width of about a line, the distance

of the groove from the margin of the lid; in the cases of entropion this is directly opposed to the effect, if not to the cause of the disease, and the cure of the inversion of the lid must be the foremost indication; the *edge* of the lid must have been *first* inverted, and if this cannot be, no entropion will occur. In the cases of trichiasis it withdraws the inverted lashes, in some degree by eversion of the edge of the lid, and also, it appears to me, by contraction of so deep a wound close to the edge of the lid, the skin is drawn away from it, and the hair bulbs depressed towards the wound of the cartilage, involved in the cicatrix, and the lashes themselves necessarily elevated. By the operation in these cases (trichiasis), the inverted lashes resume their normal position, as regards the eye, in the other cases (entropion), when uncomplicated, the inverted lid is remedied with probably slight abnormal eversion of the lashes.

A whitish linear scar is all that is left of the wound, and this is not more apparent than any little fold of the skin at the margin of the lid.

Precautions for the Operation.—The ring-forceps must not be tightened more than is sufficient to interrupt the circulation, or an inconvenient swelling of the lid occurs after all bleeding has ceased. In some cases of simple entropion the knife must be very lightly used in making the groove, so as not to cut through the cartilage and Meibomian canals, or the lid itself, upon the flat blade of the forceps.

Variations in the Operation.—The first incision is to be made close to the margin of the lid, but not to divide the roots of the lashes, the the distance at which these are situated in the different diseases that may require the operation is very variable, however, the width of skin that should be left next to the row of lashes, should be approximated to the different conditions of the skin at the margin of the lid; thus if it is thickened at the part, it may be left a line in width, but much narrower, in the case of a thin lid.

The second incision includes the strip of skin to be excised, and of this, if the lid is much thickened, rather more than usual must be taken, so as to obtain an adequate portion of the cartilage. The last and most important step is the determination of the portion to be removed from the cartilage. This must be of a width externally according to the thickness of the cartilage; because the depth of the groove should be equivalent to the thickness of the cartilage, and when this is much thickened, enough can only be obtained by inclosing a much wider strip, if it is desired that the angle formed by the sides of the groove should be the same in different cases.

Cases Unsuitable for the Operation.—Grooving of the fibro-cartilage is, I believe, applicable to the ordinary cases of entropion and trichiasis, in which the lashes are of natural form, and in which it is therefore desirable to save them, but it is inappropriate to those in which the lashes are deformed, and their loss of little importance; in these cases if the lashes could be rectified in position, they would answer

none of their regular purposes; they are fine, colourless, and curly, and extirpation of these spurious lashes is *necessary* for the cure of the disease. I believe this operation is also inappropriate to cases in which the lashes are normally placed, excepting two or three of abnormal direction inwards: grooving may be done for partial entropion or trichiasis, but not for trichiasis of two or three lashes only. In one of my cases, in which all the lashes were *inclined* inwards, but only a few together were in contact with the eye, I made a small groove in the whole length of the cartilage, and introduced a suture at that part of the margin of the lid where most eversion was necessary; the result was good, the lashes were in this way altogether everted, and a notch was left in the margin of the lid where the suture had been placed, vision was improving, and the cornea was comparatively clear. The operation would be irrational when entropion results from tumours of the lids, and it is probably inexpedient when trichiasis results from irregular cicatrization after the removal of these tumours, or from dead bone, wounds, burns, &c.

Grooving of the fibro-cartilage is, I believe, employed with the best effect in cases of confirmed chronic entropion, or of trichiasis with thickening of the edge of the lid. This mode of operating does not exclude other operative procedures; the removal of a fold of skin with some portion of the muscle, in senile entropion and in some other cases, may be all that is requisite; and, at any rate, it does not forbid an after-trial of my operation upon the tarsus itself.—*Ophthalmic Hospital Reports, April* 1858, *p.* 123.

103.—APPLICATION OF THE COMPOUND TINCTURE OF IODINE AS A REMEDIAL AGENT IN CASES OF TRICHIASIS, DISTICHIASIS, AND ENTROPIUM.

By Alexander Carr, Esq., formerly House-Surgeon to the Royal Westminster Ophthalmic Hospital, the Westminster Hospital, &c.

[Mr. Carr had directed a young man with ptosis of the right eyelid, apparently depending upon an atrophic condition of the levator muscle, to come to his house, for the application of nitric acid to the lid. When the man came, finding he had no nitric acid at the time, he applied some tincture of iodine to the lid simply as a placebo, directing him to come again next day. As this single application had caused slight contraction of the lid, Mr. Carr determined to continue the application, which he did, and with the result of a perfect cure in a month.]

Success in this instance induced me to try the same remedy in cases of trichiasis and entropium, with the view of counteracting the atonic state which accompanies, and I believe induces, the affection. I consider the inversion of the lashes merely as an effect, not the primary cause. The muscular fibre becomes relaxed; the skin sympathises;

the lashes turn in and irritate the eyeball, which becomes painful and inflamed; the cornea is rendered opaque; the sight permanently impaired; and thus the disease goes on, palliated by the extraction of the lashes, or for a time arrested by the excision of a portion of the lid.

Eliza M., aged thirty, residing in King-street, Soho, had suffered from in-growing of the lashes for six years. She assists her husband in his business as a tailor, and the only way in which she can keep at work is by having the lashes constantly cut. This in a measure abates the evil; but as it causes them to grow more strongly she is never free from suffering. She came under my care in consequence of an attack of rheumatic ophthalmia, which being relieved, I advised her to have treatment for the affection of the lid. This she consented to; but wished it to be postponed until after her confinement, which was near at hand. When she got about again she came to me, and I found her worse. Greater debility had caused the lid to become inverted more completely, and her suffering was proportionately increased; and in spite of all the cutting, she was quite unable to work. I painted the tincture carefully over the surface of the eyelid, applying it first on the 12th March, 1857; it was continued daily until the 27th, and with intervals of two or three days until April 15th, at which time she ceased to attend, being perfectly relieved. I saw nothing more of her until May in this year, when she came in great fright, telling me that two days before, she had felt her eye troublesome, and "feared it was going to be bad again." On examination, I found there were no grounds for alarm, the cause of the pain being an eyelash which had got turned in from rubbing the eye. I everted the lid and removed it; and in compliance with her entreaties, gave her a brush with the tincture. Three days afterwards she came again, quite free from annoyance; and I ascertained that during the period which had elapsed since her first attendance she had remained able to work in comfort, and had not once removed the lashes.

Mrs. B., the wife of a gentleman residing in Westmoreland, came under my care in May, 1857. She had suffered for nine years from entropium of both eyes, affecting both the upper and lower lids, and was in continual pain, quite unable to bear the least light, sitting usually in a darkened room, and, when out of doors, wearing a thick veil and shade. Her health was much impaired, probably from want of exercise and continual suffering. Her medical attendant had urged her to undergo an operation, and advised her coming to London for that purpose; but the natural dislike to such measures, and unwillingness to leave her family, had caused it to be put off from year to year, till quite unable to bear longer the constant misery, she came up determined to submit to anything that offered hope of relief. On my first interview I was inclined to regard it indeed as a forlorn hope. The entire series of lashes were turned in upon the eyeball, which was reddened and inflamed, there was constant discharge of hot irri-

tating tears, and on both corneæ were nebulous patches. On more particular examination, I discovered in both lids a complete secondary row of lashes, and on the right lid an additional clump of hair growing above the inner row; this acted as a scrubbing-brush, and proved the most obstinate foe I had to contend with. The skin of the lids was unusually lax, and lay in absolute folds, and even when raised with the fingers, they still overhung, so that the lashes were not removed from contact with the eyeball. The natural treatment in this case was, of course, excision of a large portion of skin; and this, I believe, would have afforded temporary relief, but I as firmly believe the relief would have been *only* temporary, for I have watched many cases in which the operation has been performed with benefit, which yet in the course of a few months have, from the skin stretching to its original extent, become as bad as ever, and the patient again obliged to resort to the frequent extraction of the lashes. I deemed it, therefore, right to tell her this, expressing also my unwillingness to perform an operation the result of which I could not look forward to with confidence. She cheerfully acceded to my wishes, not the less so I think as all cutting would be dispensed with. On the 11th of May I first applied the tincture, attending also to her general health, which was completely broken down. I made the application at first on alternate days, but towards the termination of my attendance, daily. In a fortnight there was a perceptible improvement; and in a month she could bear the light without discomfort. She remained in town seven weeks leaving sooner than was intended on account of the illness of one of her children, and before I considered her fit to do so. I have not since had the opportunity of seeing her, but have had frequent accounts of her progress. One received during this month states that the eyes continue relieved, that she can bear exposure to light, though sometimes annoyed by the tuft of hair on the right lid. The pain experienced from the application of the iodine was, in this case, singularly variable, at times being scarcely felt, at others almost unbearable. I could, however, trace a marked connexion with her state of health.

C. L., aged twenty-one, living in Drury-lane, had suffered from trichiasis for eleven years, during the last five of which she has been under my own observation, constantly needing the extraction of the lashes to enable her to work at all. She usually attended once a week, and sometimes more frequently. In June last I proposed to her to try this plan, and she consented. It has been applied at intervals of two or three days. The cure is not yet complete, but she appears progressing towards recovery, and has not needed the extraction of the lashes.

I should mention that these cases are not the only ones in which the plan here advocated has been adopted with complete success; in others it has been commenced, and benefit produced, but the treatment not continued long enough for the cure to be completed.

The chief objection I have found is the unsightly colour of the paint, but this is remedied by allowing a deep shade to be worn, thus concealing the eyelids.

I have the less hesitation in laying this suggestion before the profession, since it must be conceded that the old methods have practically failed, and the innovation which I advocate is, at the lowest estimate, far from dangerous, and can besides urge in its favour the plea of success.—*Lancet, Sep.* 4, 1858, *p.* 254.

104.–OBSTINATE OPHTHALMIA TARSI TREATED BY THE APPLICATION OF TINCTURE OF IODINE AND GLYCERINE.

By Dr. Angus Macmillan, Hull.

M. A., aged twelve years, five years ago had a severe attack of scrofulous ophthalmia. On examination we observed specks on both corneæ, and considerable conjunctival vascularity. Edges of eyelids much inflamed, hardened, and considerably thickened: eyelashes agglutinated together. Partial obliteration of Meibomian apertures in right lower eyelid. General health evidently much impaired; skin and digestive organs disordered, and undoubted marks of a scrofulous constitution present.

On being questioned, stated she had been under treatment more or less since the attack of scrofulous ophthalmia, that general and local means had been employed, but with no permanent benefit.

The edges of the eyelids were washed carefully, and any adherent matter removed from the roots of the eyelashes and Meibomian apertures. The edge of each eyelid being carefully everted, the tr. iodine was then applied to the whole edge by the aid of a fine camel's-hair brush, which was passed over two or three ti . es, so that the tr. iodine might enter the Meibomian apertures, and be diffused among the cilia. During the day and night frequent application of the glycerine by the aid of a common camel's-hair brush. In the course of two or three days a decided improvement was manifest. Three more applications of the tr. iodine at intervals of three or four days sufficed to cure the case. Quinine and sulphuric acid were administered internally.

Many more cases followed by the same success could be reported, but the above will be sufficient to direct attention to this mode of treatment of an affection of the eyelids, which in a majority of cases may be considered incurable. I am not aware that this method has ever been previously suggested; and should any of your readers feel disposed to give it a trial, it is to be hoped they will communicate the result of their experience, so that its true value may be ascertained. The tr. iodine is a more convenient and effectual application than the ordinary salves, inasmuch as its stimulating properties can be brought to bear more directly on the Meibomian apertures.—*Med. Times and Gazette, June* 12, 1858, *p.* 600.

105.—OBSTRUCTIONS OF THE LACHRYMAL PASSAGES.

By B. Bell, Esq., and Dr. P. H. Watson, Edinburgh.

Several years ago, the writer of this published three cases of *epiphora*, from an everted state of the punctum, in which Mr. Bowman's plan (then recently promulgated), of slitting up the extremity of the canaliculus, had been attended with perfect success. Since that time, we have met with a number of similar cases, and have had every reason to be satisfied with this comparatively trivial operation, as affording relief to a very troublesome complaint for which there was previously no sure and sufficient remedy. But we consider the procedure in question to be very important in another point of view, as constituting the first step in a progressively amended treatment of the whole class of lachrymal disorders; and for this, we have been mainly beholden hitherto to the same eminent individual.

For example, we have become familiarised with the fact, well known, doubtless, to the anatomist, but generally ignored by the practical surgeon, that the canaliculi are much more capacious in their healthy condition than the size of the punctum might lead one to suppose; and in consequence of this knowledge, those very small and inefficient probes, which were formerly deemed necessary, are now almost entirely discarded. Another advantage that attends familiarity with these manipulations, is the comparative ease and certainty with which we can ascertain the real place and degree of any obstruction external to the lachrymal sac, whether it be near the punctum, in the intermediate portion, or at the farther extremity of the canaliculus. The constriction, wherever situated, then admits of being treated on the same principles as strictures of the urethra, with silver probes of uniform thickness throughout, and of different sizes. The canaliculus being slit up on a grooved probe, as far as the caruncle, it becomes an easy matter, in most instances, to convey one of considerable dimensions into the nose, through the lachrymal sac and duct, if we attend carefully to the natural course and relations of these parts. If the probe, thus introduced and directed, meets with obstruction, one of a smaller size will probably pass, and then the same plan of treatment can be followed as in constrictions of the canaliculi already referred to.

When cases of distended lachrymal sac or mucocele, which, if neglected, would probably inflame, suppurate, and become fistulous, are treated in the manner now described, they will generally get well, without the old operation of introducing a style, which we have always looked upon as one of the *opprobria* of modern surgery. The mere slitting up of the canaliculus will, in the milder forms of the complaint, be of great service, by permitting the lachrymal sac to be more readily emptied, from time to time, by gentle pressure with the finger, and thus favouring the subsidence of inflammatory action. But when the stricture happens to exist, as is sometimes the case, close to the lachrymal sac, the contents of the latter, when it is thus compressed,

will escape through the upper punctum, even after the lower canaliculus has *apparently* been slit up along its whole extent. Under these circumstances, we must reintroduce the grooved probe, and carrying it fairly into the sac, divide the stricture thoroughly, otherwise the subsequent process of dilatation will be slow and unsatisfactory. After this, it will usually be sufficient to pass a probe into the nose once in two or three days for some little time, the intervals being gradually lengthened as the cure proceeds. We make these statements not merely on the testimony of Mr. Bowman, but as the results of our own experience. Several recent cases encourage us to expect very confidently, that an opening through the skin, and the permanent deformity of a metallic button at the corner of the eye, will henceforth be seldom necessary; and we have met with one case in which the individual, after wearing a silver style for a good many years, has been enabled to dispense with its use, the passage being kept permeable by the occasional introduction of a probe into the nose through the lower canaliculus.—*Edinb. Med. Journal, July*, 1858, *p.* 36.

106.—*Dilatation Treatment of Obstructions of the Nasal Duct.*—The plan of slitting up the lachrymal canal in order to gain access to the sac and nasal duct, as first practised by Mr. Bowman, is now very frequently followed in the out-patients' room at Moorfields, and with most satisfactory results. Formerly, in order to allow of catheterisation of the nasal duct, an incision had to be made into the sac, and risk was run that a fistula might remain. Besides this, it was a painful and very troublesome procedure, very disfiguring to the patient as long as the fistula remained open, and of course always leaving a permanent scar. The new plan is exceedingly simple, and avoids all these inconveniences. The lachrymal duct having been freely slit up on its conjunctival aspect, the introduction of a probe of any desirable size into the sac is quite easy, and when there, by elevating the handle, the nasal canal is readily entered. The slit-up duct remains permanently open, but without either disfiguring or inconveniencing the patient, and the surgeon may repeat the use of the probe at intervals for as long as may be necessary. We have seen several very threatening cases of lachrymal abscess wholly cured after two or three dilatations, but in a general way so few do not suffice. The intervals allowed should be from four days to a week, and the probe used should on each occasion be allowed to remain in for half an hour or so. The principle of cure is precisely similar to that of strictures of the urethra by the bougie.—*Med. Times and Gazette, July* 19, 1858, *p.* 630.

107.—*Patency of the Slit-up Canaliculus* is acquired by Mr. Bowman's method of passing a probe afterwards occasionally through the wound made by the knife,—if this is not done, it is probable that soon

after the operation, the opposite surfaces of the incision will become united, and the artificial channel obliterated. In some of these cases of slitting up the canal, Mr. Critchett has lately adopted a plan, by which to obviate the necessity for this after-treatment. The lower lid having been subjected to the operation, is then everted, and a small portion of the posterior lip of the wound near the caruncle is taken up with forceps and removed with scissors. In the following cases, in which it is now usual to perform Mr. Bowman's operation, Mr. Critchett believes that this additional proceeding is advisable. *Firstly*, those in which there is much thickening of the lower lid, and eversion of the punctum with consequent lachrymation, without any other lachrymal obstruction. In some of these cases he is of opinion that although the canaliculus has been opened, the passage is not sufficiently near to the eye to receive the tears, and that in all of them the tears are more conveniently received by the larger orifice that is made by excision of a part. *Secondly*, those very timid patients, to whom it has been necessary to give chloroform, or children who required much restraint during the operation. In these cases any after interference with the part is attended with difficulty. *Thirdly*, those in which there exists no lachrymal obstruction beyond the punctum, and on account of the circumstances of the case, no opportunity of treatment can be afforded after the operation is performed. In these cases a portion of the inner boundary of the canal being excised, the orifice that is made is not likely to become closed.—*Ophthalmic Hospital Reports, April*, 1858, *p.* 103.

108.—ON THE OPERATION FOR INTERNAL SQUINT.

By Haynes Walton, Esq., Surgeon to St. Mary's Hospital.

[The following cases will illustrate Mr. Haynes Walton's method of proceeding in operating for this disease:]

Case 1.—The first patient was a girl two years old. It was not at once apparent which was the squinting eye, and the girl was seemingly so stupid that she could not tell by the ordinary way of trying whether there was disparity in vision, or whether both eyes suffered from defective sight. Mr. Walton has long pointed out that, as a rule, the squinting eye is defective in seeing. But exceptions do occasionally occur; hence he always adopts the following test:—He places the patient in front of him, at the distance of two or three yards, and directs him to cover one eye, say the left, and look at him (the surgeon) with the other, keeping the head straight; the right eye will be in the centre of the orbit. Mr. Walton then directs the patient to uncover the left. Now, if the right, which has not been closed, is normal, it will keep its central position, while the left is turned inwards; but, if it be deformed, it will turn in, while the left will become straight. The experiment should be reversed. By this

searching examination, it was at once made out that the left eye was that which should be operated on. There was a question about the existence of a squint in the other; and it was not certain whether a double operation would be required. Mr. Walton said that he could not always decide this point. The internal rectus of the left eye was then cut just over the insertion of the muscle; a small vertical incision was made in the conjunctiva and subjacent tissue, not quite so long as the tendon is broad; a slightly curved hook was introduced, the tendon taken up, and divided. A small tag of fibres, which had at first escaped being caught, was secured in the second attempt. The external wound was brought together by two sutures, which were placed at the very margin of the incision.

Many persons are apt to think that stitches will irritate. But they do not cause the least inconvenience; patients are not aware of their presence. Their effect is very marked. The conjunctiva generally heals by the first intention. The dropping of the caruncle, so common in the ordinary operations without them, is avoided, and no fungous granulations appear. They are allowed to ulcerate out, and generally separate on the fourth or fifth day. Mr. Walton believes that, by this limited division of the conjunctiva just over the muscle, which is therefore readily hooked, and by the use of sutures, there is the greatest certainty in operating, and less disturbance to the eye, and less violence inflicted, than by any known way of operating. To all subconjunctival plans he objects, from their uncertainty. We ought to add a remark we heard expressed by a gentleman who has seen many of the latter operations, to the effect that Mr. Walton's preliminary incision in the conjunctiva was less than that he had seen made in the membrane when the muscle was divided subconjunctivally with scissors. The advocates of this way of proceeding incise the conjunctiva either above or below the level of the muscle, sometimes making a horizontal cut; and then introduce the instruments.

It proved requisite to operate on the second eye. The patient was shown on that day week. Her eyeballs were perfectly parallel, and the incision in the conjunctivæ had quite healed.

Case 2.—A woman, aged 22, had inversion of both eyes, apparent to the most casual observer. There was no difficulty in ascertaining that both were defective in sight, the one being rather worse than the other. Both were operated on at the same time. In this instance, the deformity has not been so completely removed. The best results, according to Mr. Walton, are to be obtained earlier in life, or a few years after the squint appears. But there was much improvement in the obliquity, and vision was benefited. The woman was quite satisfied with what had been done, and so were her friends.

Respecting the consequent impairment in sight in these cases, Mr. Walton finds that sometimes it is all at once, no further change occurring; sometimes it is gradual, extending over a period of weeks or months.—*British Med. Journal, May* 1, 1858, *p.* 345.

109.—*Divergent Strabismus.*—A few weeks ago two cases of divergent strabismus were under Mr. Critchett's care. at the Moorfields Ophthalmic Hospital, the subjects of which were a father and daughter. In each the degree of divergence, which was great, was almost exactly similar. The father had, however, contracted his; but in the daughter the deformity was congenital. An unfavourable prognosis as to the results of the ordinary operation was, therefore, given by Mr. Critchett in the latter case. The operation was performed on both patients on the same day, and consisted in the division subcutaneously of both external recti. The father's eyes remained perfectly straight afterwards; but, as had been feared, the girl's were in the course of a fortnight almost as widely divergent as ever. Under these circumstances, Mr. Critchett determined to adopt a procedure for bringing forward the attachments of the internal recti, which we have several times before seen him perform. The patient being under chloroform, with scissors and forceps the conjunctiva of the inner side of the globe was divided at about a quarter of an inch distance from the corneal margin, for a length of three-fourths of an inch. The dissection was continued inwards, until the internal rectus and the adjacent fascia and cellular tissue having been freely divided, the first third of the inner side of the globe was cleared, and a considerable flap, consisting of muscle, conjunctiva, and intervening cellular tissue turned inwards. Sutures were now passed through the whole of this flap, half an inch from its free margin, and again through the narrow attachment of conjunctiva at the edge of the cornea. A curved portion of the flap (at its deepest part fully the third of an inch wide) was next cut away, and the sutures were then tied across. This had the effect of drawing the eyes very much inwards, giving a very decided internal squint. Three sutures on each side had been employed. When we last saw the patient, there was still a slight degree of internal strabismus; but as the tendency would no doubt be towards the production of the original divergence, the eyes will, in all probability, be straight in the course of a few months. Even should they not, however, their present condition is very greatly preferable to the state of things before the operation.

This operation is like many others of those performed on the appendages of the eye, not nearly so difficult to perform as it may, we dare say, strike the unpractised reader of our description. It is one which can be most confidently recommended for bad cases of divergent squint, whether the result of previous operations or otherwise. Cases of divergence are, we may again remark, attended by infinitely more of disfigurement, and are at the same time far more difficult to remedy than those of convergence. For the latter *subconjunctival* myotomy, as practised at Moorfields, realizes everything that can be expected of a surgical procedure, and very rarely indeed requires any modification. —*Med. Times and Gazette, June* 12, 1858, *p.* 602.

110.—ON THE ARTIFICIAL MEMBRANA TYMPANI.

By J. Yearsley, Esq., Surgeon to the Metropolitan Ear Infirmary, &c.

When, in 1848, ten years ago, I made known to the profession a new principle of treating deafness attended by perforate membrana tympani, I was unable to account physiologically for the success of the remedy, nor could I offer any satisfactory solution of its *modus operandi*.

In speculating upon the subject, and in my innocence, I asked, "Is it possible that moist wool, placed at the extremity of the passage of the ear, can transmit the vibrations of sound in the same manner as the natural membrane, or must we look for some other explanation?"

In 1853, five years after my new treatment was made known, I was enabled to give a probable solution to many points at first involved in mystery, and I then accounted for the success of the wetted cotton thus—"The loss of the membrana tympani deprives the ossicula of their natural tension; the cotton is so adjusted as to restore the necessary support, and then the waves of sound break upon the cotton, through which substance the impulse is conveyed to the ossicula, and so onwards to the brain." From that time to the present, I have seen no reason to alter this view of the question, whilst much additional evidence has been afforded me to confirm it. Of late, the new treatment has occupied the attention of continental surgeons engaged in aural surgery; and during the year 1856, a pamphlet was published by Dr. Ehrard, of Berlin, proving indisputably all that I had said and written upon the subject. I may observe, *en passant*, that Dr. Ehrard has been himself long a sufferer from the condition of ear favourable for the use of my remedy, and that he has used it with great success for many years, after having experimented with other substitutes, including the gutta percha membrane, which he entirely condemns. But the statements of Dr. Ehrard are particularly interesting to me, as establishing the fact of another condition of the ear beyond the loss of the membrana tympani, in which I had myself proved the remedy to be of infinite service, and it is to this that I most particularly wish to call your attention.

Once now and then, it has happened to me to have met with a case benefited by the application of the wetted cotton, in which notwithstanding the most minute examination, I could discover no perforation of the membrana tympani whatever, a condition of the ear which, as you are probably aware, has been always considered a *sine qua non* for success; often have I been puzzled to find an explanation for this fact. Well assured that the wetted cotton acted by giving support to the ossicles of which they are deprived when the membrane gives way, I could not but attribute the success of the remedy when the membrane was *not* perforate, to a disorganisation, involving somehow or other the ossicles within the cavity of the tympanum itself. This view is borne out by Dr. Ehrard; for in a museum in Germany, he found a preparation of

the tympanum of a child, in which the mucous membrane was thickened, red, and covered with granulations, in which the stapes was entirely buried : the membrana tympani was half destroyed, its anterior part only with the malleus being present: the long process of the incus was easily seen (the part of the membrane which conceals it being wanting), and might at first have been taken for the handle of the malleus. But, and this is the main point, the incus was withdrawn from the stapes, about a quarter of a line, and the connexion was thus interrupted. The long process of the incus was easily withdrawn from the stapes and just as easily restored to its position ; slight pressure upon the malleus and the remaining part of the tympanic membrane at once restored the interrupted connexion between the incus and the stapes.

Let us consider the ossicles during life more attentively ; the malleus is firmly fixed in its position by the processus longus, by its manubrium, by the tensor tympani muscle, and by the capsule of its joint with the incus, also by fibrous bands which fix its head to the bony walls of the tympanum ; the same is true of the incus ; on the one side it is firmly fixed to the malleus, on the other its short process is fastened to the tympanum. The position of the stapes is similarly insured ; its base forms a complete joint with the oval fenestra and the stapedius muscle assists in retaining it.

On the other hand, the incus and stapes have at their junction no fibrous ligaments ; they are only united by the mucous membrane of the tympanum, which covers all the ossicles, and which during otorrhœa may so easily give way.

Now let me sketch the successive steps which lead to the disorganisation Dr. Ehrard has described. The cases in which it occurs are generally the subjects of scarlet fever or measles, especially the former. The inflammation of the mucous membrane of the pharynx, which attends these cases, extends along the Eustachian tubes to the tympanic cavity ; suppuration ensues ; the tympanum becomes filled with pus, for which there is no escape, the Eustachian tube being closed by the inflammation of the mucous membrane ; the pus presses in all directions, pulls the ossicles asunder, tearing the inflamed mucous membrane at the junction of the incus with the stapes ; and at length the membrana tympani yields to the pressure of the accumulated matter. Such a rupture of the membrana tympani but rarely heals ; and we have then the permanent perforation, for the relief of which my wetted cotton happily adapts itself as a remedy.

But is it not possible, nay, probable, that many cases occur in which the disunion of the ossicles takes place from the ulcerative process, as in the preparation cited by Dr. Ehrard, the accumulation of pus being insufficient to force its way through the membrana tympani but the inflammatory condition of the mucous membrane subsiding, without involving the membrana tympani, the pus makes its way down the Eustachian tube, the natural route for pent up secretions

in the tympanum? In no other way can we account for benefit arising from the employment of the cotton in cases of deafness unattended by perforation of the membrana tympani.

However it may be, there can be no doubt that the *modus operandi* of the wetted cotton, or the artificial tympanum, as it is called, is purely mechanical. By the partial or entire loss of the membrana tympani, the ossicles are deprived of their natural tension, and deafness is the result. The cotton is so adjusted as to re-supply the ossicles with the *support* necessary for the conduction of sound to the fenestra ovalis, and hearing is restored. In like manner, in cases in which the ossicles (the incus and stapes) become disconnected by the ulcerative process, the cotton exercises the *pressure* necessary to bring them again into apposition, so that sound may once more press onwards to the brain, where the mind realises its impression.

Support in the one case is the *modus operandi* of the treatment; support, with slight pressure, in the other.

In conclusion, the practical deduction to be drawn from this new fact in the history of the artificial tympanum is, that all cases of deafness traceable to disorganisation of the drum of the ear, as a sequela to scarlet fever or measles, should be tested as to the applicability of the wetted cotton for their relief.—*Med. Circular, Sept.* 8, 1858, *p.* 113.

MIDWIFERY,

AND THE DISEASES OF WOMEN, ETC.

III.—OBSERVATIONS ON THE DURATION OF PREGNANCY.

By Dr. Elsasser.

As a contribution to this subject, Dr. Elsässer communicates the particulars of 260 cases of normal pregnancy with mature children, entered in the journals of the Stuttgart Lying-in-Hospital, and to which certainty may be attached.

1. *Reckoning from the day of conception*, the duration was—

Exactly 280 days in		23
Less than	„ „	166
More than	„ „	71
		——260

In nearly one half (126) the duration was between 271 and 280 days, and in 62 other cases between 281 and 290 days.

Separating the cases into primiparæ and pluriparæ, we find that there were 149 *primiparæ*, and in these the duration was—

Exactly 280 days in		14
Less than	„ „	96
More than	„ „	39
		——149

In 111 *multiparæ* the duration was—

Exactly 280 days in		9
Less than	„ „	70
More than	„ „	32
		——111

So that among primiparæ there have been greater abnormalities in plus and minus, and the mean normal period has been seldomer met with than in multiparæ. The extremes of the duration of pregnancy (232 days, and from 301 to 306 days) occurred in primiparæ.

2. *Sex of the children.*—The sex of the child seems to have exerted little or no influence upon the duration of the pregnancy. There were born 130 children of either sex; but as among the primiparæ a great preponderance of female (85) over male (64), happened to occur, the extremes of duration were met with in them.

3. *Reckoning from the commencement of the last menstruation.*—The indication of this is often wanting, or too indeterminate to be relied upon; and among these cases it could only be depended upon in 175. Of these 13 menstruated once after conception, and the reckoning in them was made from the penultimate menstruation. The duration was found to be—

Exactly 280 days in			12
Less than	„	„	43
More than	„	„	120
			——175

Of the last number the duration was from 281 to 290 days in 60, 291 to 300 days in 49, and 301 to 318 days in 11.

If 280 days be accepted as the normal duration, the reckoning from the date of conception more nearly approaches it (in 8·8 per cent.) than that of the last menstruation (6·8 per cent.) This so-called normal duration is, however, that which is seldomest met with; for reckoning from the period of conception 91·1 per cent., and from the commencement of the last menstruation, 93 per cent. of all the cases either fall short of or exceed this term. The same deduction may be drawn from the observations of others. Thus, Merriman found only 9 of 114 cases in which labour came on at the 280th day. Reid enumerates only 18 of 40 women in whom, conception following a single coitus, labour came on between the 274th and 284th day; and Duncan found, reckoning from the period of conception, 275 days, and from the last day of menstruation 278 days, was the mean period.

4. *The interval between the commencement of the last menstruation and conception* was found to be—

			5 days in	13 cases
From	6 to	10	„	47 „
„	11 „	15	„	38 „
„	16 „	20	„	18 „
„	21 „	25	„	9 „
„	26 „	30	„	14 „
Above	. .	30	„	8 „
				——124

These statements are, however, to be taken with the greatest caution, for it is seldom that this class of women observe exactly the last day of menstruation.

5. *The weight of the child in relation to the duration of pregnancy.*—Dr. Elsässer furnishes a table in which the mean weights of the children are placed side by side with the duration of the pregnancies of their mothers; but we need not transcribe this, inasmuch as it only proves that there is no relation prevailing between the two facts.—*Henke's Zeitschrift.—Med. Times and Gazette, June* 12, 1858, *p.* 608.

112.—MENSTRUATION DURING PREGNANCY.

That a discharge, more or less identical with the ordinary catamenial flow may occur during pregnancy, is admitted by the majority of experienced observers. The following case, under the care of Dr. Graily Hewitt, is an interesting example of this kind :—

Mary B., aged twenty-five, presented herself at the Samaritan Free Hospital in April last. She had been married for six years. The catamenia commenced at the age of twelve, and at first appeared every two months. After a suppression which lasted for six months, the discharge became regular at the age of fourteen, and continued so until after her marriage, the ordinary interval being a calendar month. She became pregnant for the first time rather less than six years ago, and was delivered of a healthy child, now alive. During this first pregnancy, however, it is stated that every fourteen days a bloody discharge occurred, lasting three or four days, and this periodic discharge persisted during the *whole period of gestation*. The discharge was rather paler than that observed before she became pregnant. The child was suckled for six months, and during lactation no trace of bloody discharge was noticed. A second pregnancy, attended with precisely the same phenomena, terminated favourably three years ago. The second child, also now alive, was suckled for fifteen months, and the catamenial discharge was absent in this second instance also during lactation. The catamenial discharge is habitually rather excessive in quantity, continuing usually six to seven days; it occasionally extends over twelve or thirteen, and this has been the case since she was married only.

There appeared no reason for disbelieving the facts of the case, as above stated, and as it was important to substantiate them as far as possible, further inquiries were made, the result of which confirmed the truth of the patient's account. From the birth of the second child up to seven months ago, she continued regular ; after that time, symptoms of pregnancy were again observed—viz., morning sickness, pain in the legs and back, resembling those which occurred in her former pregnancies; but the catamenial discharge at the same time became irregular, the irregularity consisting, as in the former two instances, in its taking place about every fortnight. This latter circumstance, indeed, as she herself observed, was one which, from her former experience, led her to consider herself again pregnant. Four months ago the abdomen became swollen, and the breasts much enlarged and painful. Three weeks later, while walking in the street, she slipped upon a piece of orange-peel; and twelve hours afterwards, pains, like those of labour, supervened, and a fleshy substance was expelled from the vagina. From an examination of these and other facts related, it is evident that abortion then took place. The abdomen immediately diminished in size, and has remained very small ever since.

The case is one of very considerable interest. Here, in fact, was an instance of the kind referred to by Desormeaux (quoted by Dr. Montgomery), "in which the appearance of the menses in small quantities, and at an unusual time, was almost a certain sign of conception." So, indeed, the patient, in the case just related, considered it to be. The same series of phenomena were observed, let it be remarked, on *three* successive occasions.

The patient now sought relief for pelvic pain and menorrhagia depending, as Dr. Graily Hewitt was led to believe, on excessive uterine engorgement, and deficient involution of that organ after the abortion. No other morbid condition was detected on examination. —*Lancet, July* 24, 1858, *p.* 91.

113.—GENTIAN TENTS IN THE TREATMENT OF PARTIAL OCCLUSION OF THE CERVICAL CANAL OF THE UTERUS.

By Dr. J. H. Aveling, Sheffield.

The office of the cervical canal of the uterus is somewhat peculiar, inasmuch as it has to transmit two distinct fluids in two opposite directions. If any obstruction, therefore exist in it, the ill effects are double-fold. If the semen is unable to reach the interior of the uterus, sterility is the consequence; and if the menstrual fluid is unable to pass into the vagina, amenorrhœa or dysmenorrhœa, if the obstruction be only partial, are the effects.

I propose now only to speak of those cases in which the cervical canal of the uterus is partially occluded, and shall at once proceed to glance over the numerous abnormal conditions which may give rise to it.

Partial occlusion of the cervical canal of the uterus may be congenital; or it may be caused by a membrane stretching across the canal, the result of adhesive inflammation; by injuries during labour; by hypertrophy and elongation of the neck; by an inflamed and congested state of the mucous membrane lining the canal; by polypi and excrescences lodging in the canal; by a plug of viscid lymph filling up the canal; by displacements of the uterus; by cancer and tumours; by spasmodic contraction; by the injudicious employment of caustics, &c.

In looking over this list of causes, it is cheering to notice in how many the interference of the surgeon would be likely to be advantageous. Of course no one mode of treatment would cure all; and in bringing the plan of treatment which I shall presently mention before the profession, I do not pretend to have found a universal remedy. The good effects of dilatation in these cases is now fully recognised. Women who have been sterile, and who have suffered all their lives from dysmenorrhœa, have by its means ever after menstru-

ated naturally, and often become mothers of large families. The question is not, whether dilatation shall be employed, but *how*.

It is certain that some look upon the mechanical treatment of dysmenorrhœa as a great fallacy. "The dilatation of the os uteri to increase the flow of the menses is a specimen of great credulity," says Campbell; and others who have attempted the operation without producing the desired effect are sceptical as to its value. I am inclined, however, to think that a great deal of this feeling has been produced by the selection of improper cases, or by the incomplete way in which they have been treated. For instance, if the seat of the stricture be at the os uteri internum as well as at the os externum (as is the case with a patient I have now under my care), little benefit would be obtained by dilating the os tincæ alone; or if it be a case of dysmenorrhœa, accompanied with large firm clots, no relief would be afforded by dilating the canal to such a size as would admit of the introduction of the sound.

The accumulation of the menstrual fluid, if the uterus be not very irritable, at first merely produces a feeling of weight in the loins and of distension in the pelvis. These, however, are soon followed by the most severe bearing-down pain, which is often so agonising as to bring the patient down upon her knees as if she were in labour. The perspiration streams down her face, and her sufferings are at length terminated by the expulsion of a clot which has actually been crushed through the strictured canal by the violence of the uterine contractions. Where these symptoms persist after the employment of the ordinary modes of treatment, an examination is peremptorily called for.

Professor Simpson's sound is of the greatest value in the diagnosis of these cases. By it we can find out the exact point or points of obstruction, and also the amount of distension of the cavity of the uterus which the accumulation of the fluid has caused. I cannot admit that the ease or difficulty with which the sound may be introduced into the uterine cavity is a sufficient test as to the necessity of operative interference. When the menstrual fluid is secreted slowly, and is thin and unaccompanied by "clots and shreds," an aperture through which the uterine sound would pass might probably be large enough to allow the fluid to flow without causing more than ordinary pain; but when the opposite is the case, I feel convinced that such an opening would be insufficient. The clot resting in the canal forms a perfect ball-valve, and relief can only be obtained by its being crushed, or by its gradually dilating, by a painful process, the whole length of the constricted canal before it. The os uteri, though it certainly does relax to a certain degree at the menstrual periods, is not so accommodating as some writers represent, who make it to open and shut like the mouth, whenever it is required. If the stricture be firm and the clot hard, nothing but the forcible dilatation of the former, or the crushing and breaking up of the latter can give relief.

It is cruel to leave to nature the excruciating process of dilating the canal, when it can be almost painlessly performed by science.

Dilatation of the os uteri seems to have been performed as early as the days of Hippocrates, although still later, in the time of Fabricius at Aquapendente, obstructions of the os uteri were looked upon as incurable. Mauriceau fully recognised the effect of an obstructed condition of the cervical canal of the uterus in producing sterility and dysmenorrhœa, and mentions instruments for curing it. Dr. Mackintosh was the first to bring this subject prominently before British practitioners. He published 27 cases, in which he had dilated the uterine canal with bougies, and of these 24 were cured of dysmenorrhœa, and 11 became pregnant. This marvellous success at once attracted attention, and among those who now sanction and practise the operation of dilating the cervical canal, in some way or other, may be mentioned the names of Professor Simpson, Dr. Oldham, Dr. Rigby, Dr. Protheroe Smith, Mr. Whitehead, Mr. I. Baker Brown, &c.

Professor Simpson uses metallic bougies of graduated sizes, or adopts the speedier method of dividing the stricture with a kind of lithotome caché. Dr. Rigby uses a dilator with blades of well-tempered steel, which are expanded within the cervical canal, and allowed to remain so for a short time. Mr. I. Baker Brown has adopted the tubular system, which Mr. Thomas Wakley employs in stricture of the urethra, and others prefer still to use the elastic bougies which Dr. Mackintosh first proposed.

The plan of treatment which I, with all modesty, now propose, appears to me to have advantages over the different contrivances which I have just mentioned. A piece of gentian root is easily obtained, and any one possessing a penknife can manufacture it into a tent of the required size. It may be readily introduced by the aid of a pair of common dressing forceps, without using the speculum. A piece of string should be tied to its vaginal extremity, for the purpose of removing it after it is expanded. In less than four-and-twenty hours the tent, by the absorption of the fluid with which it is in contact, will have dilated the canal as far as it is able. It may then be withdrawn, and another introduced of a larger size if necessary. In treating these cases, it must be remembered that the seat of stricture may be nearly two inches higher up than the os tincæ. The tents should therefore be two inches and a half long, at least, so as to ensure their penetrating the os uteri internum. I have been struck with these tents coming out marked deeply by the strictures. In one case, in which the stricture had been caused by the application of powerful caustics, the tent appeared as if it had been tightly constricted by a piece of fine cord. The discharge during the presence of the tent is, of course, of a brown colour. Injections of warm water should be frequently used.—*Med. Times and Gazette, June* 26, 1858, *p.* 653.

114.—*Chloroform in Natural Labour.* By Dr. E. Rigby.—In natural labour, where it is not desirable to produce a powerful effect, the rule, which I long ago pointed out in this journal, of endeavouring, as far as possible, to draw the line between allaying pain and destroying consciousness, ought, I think, always to be adhered to. A patient may thus be kept quite sufficiently under the influence of chloroform, for any length of time, and yet be able to hear and answer questions, and thus we frequently hear a patient remark, "I know I have a pain, and yet I do not feel it!"—*Med. Times and Gazette, Sep.* 18, 1858, *p.* 306.

115.—*Uva Ursi, as an Obstetrical Agent.*—Dr. Beauvais strongly recommends the substitution of this for the secale cornutum, being as efficacious, and far more innocent in its operation. In ordinary delayed labour he gives grs. xv. in infusion every hour; but when rapid effects are desired, as in metrorrhagia, a decoction of 4 drachms to a quart of water should be employed, in divided and frequent doses. In hematuria, incontinence of urine, menorrhagia, &c., he has found a syrup, made of 90 parts of the leaves to 1000 parts of sugar, and 9·8 of boiling water, a good preparation.—*Bull. de Thérap.—Med. Times and Gazette, Sep.* 11, 1858, *p.* 280.

116.—ON THE INDUCTION OF PREMATURE LABOUR.

By William Hoar, Esq., Surgeon to the West Kent Infirmary, Maidstone.

The artificial induction of labour is not of frequent occurrence; and therefore, when called upon to perform it, the accoucheur is somewhat at a loss as to the best mode of doing so. I myself felt this some years ago; and having performed the operation nine times in two separate patients, I have thought it well to make a few remarks on the present occasion.

The indications for the operation have been contraction of the pelvis in almost every instance on record.

The preparatory treatment consists in hot-baths, tepid injections, friction of the abdomen, and the administration of ergot.

The methods of operating recommended by different writers have been the following:

1. *Dilatation of the os uteri* and partial detachment of the membranes around it. The Germans also introduce subsequently a piece of sponge within the os. This is very tedious, but safe to the child.

2. *Puncture of the membranes* is the oldest method—"by far the easiest, quickest, and most certain." It is said that a smaller proportion of children are saved by this than by the former method.

3. *Cold douche*, by means of a tube introduced into the vagina against the os, through which a stream of cold water is constantly

applied to it from a vessel raised high above the pelvis. This is a safe and easy method, but inconvenient and disagreeable to the patient.

4. *Irritation of the Nerves of the Mammary Glands.* M. Scanzoni has lately published two cases wherein labour has been thus produced. He kept up constant suction on the nipples by means of an apparatus made of india-rubber.

. The method adopted by myself was the second; viz., puncture of the membranes. I prepared my patients by the administration of infusion of ergot every six hours, until pain commenced and the os began to dilate. I have a catheter with a hole at the point, in which is concealed a stilet, bluntly pointed, longer than the catheter itself, and at the proximal end passed through a piece of cork, whereby it is prevented from protruding more than a quarter of an inch. This is guided by the forefinger of the left hand within the os; the head is readily felt, if not at first, certainly during a pain; the stilet is protruded, and I then scratch gently upon the cranium, until a small quantity of the liquor amnii escapes. This completes the operation. In the course of from twelve to thirty-six hours labour comes on, and delivery takes place speedily, and without difficulty.

Results to Child. Of the nine cases alluded to, five of the children lived; four are still living, and likely to live; one has died at more than twelve months of age of cerebral affection, quite independent of its mode of entry into the world. Of 373 cases recorded by Dr. Hoffman 250 were born living or recovered from asphyxia, and 77 died from causes which had no reference to the operation; such as faulty position, perforation, &c. Of 192 of those born living, 127 continued to live; twenty-eight died within six hours; six in twenty-four hours; and the rest at periods varying from a year to a day.

This corresponds with the results of my cases; rather more than half of those born alive having continued to live.

The operation is rarely required in primiparæ, although cases occasionally occur where general deformity is so great that in the event of pregnancy it becomes our duty to ascertain the dimensions of the pelvis at an early period.—*Brit. Med. Journal, June* 5, 1858, *p.* 454.

117.—INDUCTION OF PREMATURE LABOUR IN A DWARF WITH DISTORTED PELVIS.

By Dr. Edmund A. Kirby, Euston Square.

[The patient who was twenty-seven years of age, and had been married twelve months, was quite a dwarf, being only forty-two inches in height. She was of fair complexion, and of decided strumous diathesis. During infancy she had been afflicted with rickets, and to this her diminutive size was partly though not entirely owing.]

As it was obvious that there existed considerable distortion of the

pelvis as well as of the spine, I obtained permission to examine them particularly, with a view to discover if the distortion was of a nature likely to obstruct the progress of natural labour. The following are the measurements which, with the kind assistance of Mr. Coster, I took at that time. A straight line drawn down the spinal column from the last cervical to the union of the last lumbar and first sacral vertebræ measured fourteen inches. This portion of the column described three curvatures—two lateral, one being to the right and the other to the left, and one angular forwards. The extreme of the lateral curvature occurred at the fifth dorsal vertebra, and that of the left at the last; the former measuring two inches, and that of the latter, one inch and an eighth out of the perpendicular. The angular curvature involved the whole of the lumbar and last dorsal vertebræ, the bodies of which are thrust forwards, downwards, and to the left, and occasion a curvature of one inch and seven-eighths. The pelvis is small and contracted in all its measurements, slightly flattened from before backwards, the promontory of the sacrum and last lumbar vertebra projecting forwards to the pubis, and thereby narrowing the antero posterior diameter of the brim *to rather less than two inches and a half*. The cavity and outlet presented no point of particular interest.

From these measurements, which were taken with great care, it will be seen that the birth of a living child was not possible if the labour was delayed until the full period of gestation; nor could she then have been delivered without resorting to that dire and repulsive operation, craniotomy. Therefore, with the concurrence of Mr. Coster, I determined to induce labour at the seventh month, but at this time she had an attack of subacute bronchitis, which compelled me to delay doing so for a fortnight.

On Saturday, January 30th, my patient had as nearly as could be ascertained completed her thirty-third week of gestation, and was so far recovered from bronchitis that it was thought inexpedient to incur the risk of further delay. Induction of labour was now commenced by administering decoction of ergot in ounce-and-a-half doses every four hours.

In less than thirty-six hours after taking the first dose, uterine contraction was set up, but although the pains were persistent and severe, no perceptible impression was made on the os uteri until the evening of Wednesday, Feb. 3rd, when I found it soft and dilatable. Her general health during this time had been good; the bowels had acted regularly; tongue clean; appetite good; pulse quick and full. Nourishing diet allowed; ergot to be continued.

Thursday, Feb. 4. The patient states that she has been in strong labour all night, and thought she should have been obliged to send for me. Os uteri dilating favourably; it now readily admits the finger; tongue clean and moist; pulse 120; appetite and spirits good. Continue ergot; bowels to be relieved by castor oil.

Friday, 5th. Very fatigued; complains of want of sleep; pulse 125;

tongue not so moist as on the preceding day; os dilating slowly, but satisfactorily. Ordered to take tincture of opium, thirty-five minims; rest enjoined; ergot to be omitted.

Saturday, 6th. She has had some sleep between her pains, and is much relieved; has taken a good breakfast, and is in excellent spirits. Dilatation of the os had progressed most favourably, and I was enabled to pass two fingers within the cervix, and cautiously separate the membranes as far as I could conveniently reach. Repeat anodyne draught at bed-time.

7th. On visiting my patient with Mr. Coster this morning, we found that she had had but little sleep during the night, and that the uterus contracted vigorously at intervals of four or five minutes. The os was soft, moist, and well dilated; her general symptoms were much the same as on the preceding day, the pulse continuing 120. Owing to the protrusion of a large bag of fluid the presentation could not be made out satisfactorily, while the membranes remained entire; but as no further advantage could now be gained by preserving them, I at once ruptured them, and sought to determine the presenting part, which I found to be *the elbow, the child laying transversely, the shoulder resting on the brim of the pelvis.*

Such a presentation under any circumstances is most perplexing, but under the special circumstances of this case was peculiarly embarrassing, and left us to decide upon adopting one of two courses, either of which would obviously be attended with difficulty. The first was to raise the shoulder, and bring the head into proper relation to the brim, and to wait for the efforts of Nature; and the alternative was to turn, and to endeavour to deliver at once. In consultation it was determined to adopt the latter course, and having taken the usual precautions, I proceeded to accomplish the object we had in view. This however, was not easily done, owing to the smallness of the parts, the contracted state of the brim, and the bulging forwards of the bodies of the lumbar vertebræ. At length, having possessed myself of the feet of the child, I was enabled to turn and bring them down; but when the head reached the brim, there was a delay of some minutes. The resistance here was considerable, the umbilicus ceased to pulsate, and the life of the child depended on its immediate delivery. Having taken care to adapt the head to the brim of the pelvis, it required firm and continued traction to dislodge it; but when this was done, it swept over the floor of the pelvis, and passed the outlet without unusual obstruction.

The child was born apparently lifeless, but after a few minutes a faint pulsation was restored to the cord, and by means of the prone and postural respiration, the heart and lungs were soon brought into full play, and we had the satisfaction of handing to the nurse as lively a baby as could be desired. The time employed in the delivery was about twenty minutes.

Returning to my little patient, I found her somewhat exhausted

and complaining of faintness; the uterus, however, was contracting firmly, and there was no hemorrhage; the placenta was removed from the vagina, into which it was expelled, and some warm brandy-and-water administered. I left her an hour after delivery, expressing herself "quite comfortable."

Suitable after-treatment was prescribed, and both the parent and child improved daily; at the end of the second week, the mother was walking about her room; and, at the end of the fourth, she returned to her usual avocations without having once evinced a single bad symptom. In consequence of the delicate state of the mother, I thought it prudent to recommend her not to nurse her child, and a good breast of milk was provided for the infant, on which it thrived exceedingly well.

It will be well to mention, that the quantity of ergot taken from the Saturday evening to the following Friday morning, amounted to two ounces and a quarter; and the pulse, which it will be observed was abnormally high throughout the labour, appeared to be due more to mental excitement than to her physical condition.

Remarks.—The preceding case furnishes an excellent example o the value of induction of premature labour, and gives encouragement for its more general adoption in cases not only of extreme distortion, but where the disproportion between the fœtal head and that of the brim of the pelvis is such as is pretty sure to involve the necessity of resorting to craniotomy at the full period of gestation. Rare, indeed, must be the cases in which the distortion is greater, or the attendant circumstances more unpromising, than in the one I have here related. Such an interference, however, with the ordinary process of nature cannot but be objectionable, not to say hazardous, and can only be justifiable when employed to correct, so to speak, an error which nature herself has made, and, as a choice of evils, must be regarded as considerably the lesser.

That children are sacrificed to craniotomy which might be saved by the induction of premature labour there can be no doubt, but unfortunately the obstetrician is too frequently ignorant of the necessity of the one until it is too late to effect the other; but when he is consulted, as is more frequently the case in a first pregnancy, at the sixth or seventh month, and he has reason to expect a disproportion to exist, surely the responsibility rests with him if he allow it to obtain a growth which involves the sacrifice of its life, and jeopardizes that of its mother.

It is worthy of note, that in this case ergot *originated* uterine contraction, and although the labour was induced by its agency, yet no ill effects were produced on the child; and this is the more important to observe, because, had the membranes been ruptured for the purpose of inducing labour, and consequently before the os uteri had dilated, it is more than probable that the child would have been lost, and the mother's sufferings greatly increased. Indeed, I believe the

success of the operation so far as regards the child at least, to depend on the preservation of the integrity of the ovum until the first stage of labour be completed; and in premature labour, whether induced or not, as in natural labour, the time occupied in this stage is of little importance, provided the membranes remain entire. If in natural labour it is desirable to preserve them from rupture, how much more so must it be in labour that is induced six weeks or two months before the ovum is matured or the uterus prepared for its expulsion?—*Lancet, July* 10, 1858, *p.* 31.

118.—ON THE USE OF ALCOHOLIC STIMULANTS IN THE TREATMENT OF UTERINE HEMORRHAGE AFTER DELIVERY.

By W. Thomas, Esq., F.R.C.S., Pembroke.

The utility—nay, the absolute necessity—of alcoholic stimulants in cases of uterine hemorrhage after delivery, such as brandy-and-water (good whisky-and-water is equally efficacious), must be properly insisted upon; and oh! who that has seen a patient with pallid cheeks, blanched lips, almost imperceptible pulse,—as it were, at the last gasp, from those profuse hemorrhages,—rally, on such stimulants being administered, returning to life, as it were, from the very embrace of death, can ever forget what he owes to this treatment, I cannot possibly imagine. The practitioner may be congratulating himself upon the termination of his case; the mother forgetting "her hour of nature's sorrow;" the husband revelling in the satisfaction of parental blessedness; each and all alike in comparative happiness, when the cup is at once and suddenly dashed from the lip; the medical attendant is roused to his utmost exertion, the husband frantic at the evident death of his beloved partner, the wife breathing as it were her last breath; all being dread and sorrow and dismay around. Then it is that, amidst those scenes of consternation and woe, we witness the beneficial effects of the stimulants in question: then it is we see their reviving and *revivifying* influence, and never more forget their decidedly beneficial tendency.

The administration of alcoholic stimulants is the first and most important step to be taken in these alarming and dangerous cases, and gives time for the selection and adoption of the other usual remedies. Such are pressure on which I place great reliance), cold affusions, plugging, &c. These adjuncts, however, are as nothing compared to the effective emptying the uterus, which the introduction of the hand can alone properly insure; and on this point I may possibly have peculiar ideas.

When I was a student in midwifery under Drs. Blundell, Hopkins, and Power, I was to believe the introduction of the hand a desperate —nay, a *dernier ressort;* and in cases of retained placenta, without

hemorrhage, I have waited hours for the necessary contraction of the womb, and its consequent expulsion. My experience has led to a very different opinion. I see no risk whatever in doing so; I do not *now* wait more than half an hour without introducing my hand, and encircling, as it were, the placenta with my fingers, and pressing my knuckles against the parietes of the uterus, I insure such an intense expulsory action, that, instead of finding trouble in its removal, the only difficulty would be in retaining either within its cavity. Yes, and when the placenta is high up, at the fundus of the womb, retained by what is called its hour-glass contraction, so great has the pressure been at its mouth and lower part, on the middle of my forearm, for fully to that point have I had to introduce it, that on overcoming the spasm and bringing away the placenta, my fingers and hand have for a time been powerless.

Nor in the immense number of cases of the kind that have come under my notice, in my own practice, and that of others who have called me in, have I ever, in one single instance, witnessed an unfavourable result. Let not, then, the *judicious* practitioner hesitate at the introduction of the hand to any length, while to the tyro, I would say, use the greatest caution in adopting the recommendation, for know that "fools rush in where angels fear to tread."

The pain and difficulty of this method are much less, shortly after delivery, than when resorted to some hours later. I have been sent for to a distant village, or a remote cottage, ten, twelve, or fourteen hours after parturition, and then the pain, in particular, has been most intense, especially where the patient is a powerful muscular female. And here let me remark, that it is persons of this description that suffer most during labour. The delicate woman goes through it with comparative ease; and I have always observed, that the smaller she is in stature the quicker the labour. This, indeed, is a pretty general result, and the least woman I ever knew had always the quickest time.

There is of late a marked difference, however, in the duration of labours; they are, on an average, much less lingering than formerly; but as I have intruded already so largely on your pages, I shall reserve the observations I have to make on that head for a future paper.—*Lancet, June* 12, 1858, *p.* 593.

119.—OBSERVATIONS ON SOME POINTS IN UTERINE HEMORRHAGE.

By Samuel Bell Labatt, Esq., formerly Master of the Rotunda Lying-in Hospital, Dublin.
(Communicated by his Son, Hamilton Labatt, Esq., F.R.C.S.I.)

[Mr. Labatt was engaged to attend a lady who had repeatedly suffered from uterine hemorrhage. At the last confinement, the losses of blood, and consequent depression, were so great, that apprehensions were entertained for her ultimate recovery.]

Her labour coming on at the expected time, I was summoned, and found her walking through her chamber, with pains frequent and sharp, and greatly depressed in spirits. I kept her out of bed until the first stage of labour was completed, and the child's head on the perineum; she was then put to bed, and the pains becoming strong, the head was soon expelled. Taking the necessary precaution to insure a slow progress of the child through the passages, I applied my hand on the abdomen, and followed the contracting uterus with a firm pressure. The child being born, I immediately grasped the uterus, which was well contracted, in my hand, and firmly maintained it in that condition, and having given a draught which I had in readiness, of twenty-five drops of Battley's sedative liquor, forty drops of volatile aromatic spirit, and ten drachms of camphor mixture. I turned the patient on her back, and remained at the bedside for five hours, with the uterus steadily, and without one moment's intermission, secured in the manner I have described. The placenta was thrown off in an hour after the child, and no hemorrhage or fainting followed.

Between five and six hours after delivery, I proceeded carefully to substitute for the pressure made with my hand, a towel, folded like a pad, placed over the uterus, and secured by a roller passed tightly round the loins, and then, having had the bed made comfortable, and given the patient some gruel, she fell asleep, and awoke in two hours, much refreshed, and no untoward symptom followed. She had a good supply of milk for her baby on the third day, was in the drawing-room on the fifteenth, and abroad in her carriage early in the fourth week.

I think myself justified in attributing much of the success in the treatment of this case to the great caution used in securing the contraction of the uterus, following up, as I did, the practice formerly recommended by Mr. Charles White of Manchester, and more recently by the late Dr. Clarke of this city.

In my lectures, twenty years ago, I thought it sufficient to recommend the pupils in the Lying-in Hospital to apply, immediately after the birth of the child, a pad over the uterus, secured by a well-adjusted binder passed round the hips; and this practice may suffice in ordinary cases; but when we have reason to apprehend hemorrhage after delivery, I feel assured, by ample experience, that uterine contraction and consequent avoidance of hemorrhage will be better effected and secured by the hand, in the manner I have mentioned, than by any roller, however judiciously contrived; and the pressure should be steadily kept up for four, five, or six hours, according to circumstances. Having often observed the salutary effects of the adoption of this practice at one time, and the bad effects of the neglect of it at another, in the same patient, I can with confidence recommend it to the attention of my junior brethren, who will please to observe the more important points in the management of the case I have detailed. First, I kept

the patient out of bed, as advised by Dr. Denman, till the child was on the point of being born, being of opinion, with Dr. Denman, that the erect position is favourable to uterine contraction. Secondly, I allowed the child to be entirely expelled by the action of the uterus, and even opposed some resistance to its progress through the passages, and immediately after administered a cordial anodyne draught, which I have for many years been in the habit of doing in such cases, and often with great advantage, always combining the opiate with a cordial. Thirdly, I firmly held the uterine tumour in my grasp for several hours, and then applied a pad and roller. It was the invariable practice of all the old practitioners in this city to give a glass of burnt brandy with nutmeg, immediately after delivery, and I think such a cordial will often be found beneficial, by promoting uterine contraction, and thereby favouring the separation and expulsion of the placenta, and I cannot say that I have ever known it to produce injurious consequences.

I cannot too strongly impress upon the junior practitioner the necessity of closely watching his hemorrhagic patient for some hours after all alarming symptoms have subsided, having known several cases of sudden and unexpected sinking and death long after all danger was supposed to have ceased.

Many years ago, a lady of high rank was delivered in Sackville-street by an eminent and experienced practitioner. Hemorrhage came on soon after delivery, with fainting fits, which, however, were relieved by the ordinary means; two hours after the symptoms had entirely ceased, the lady appeared to be so well that he thought he might with safety leave her. He was suddenly recalled in an hour after, and on entering the room he found her *in articulo mortis*. There did not appear to have been any return of hemorrhage, nor could any cause be assigned for the unexpected event.

About the same time I was called to see the wife of a respectable shopkeeper in Henry-street, who had been seized with profuse flooding after delivery. I found her alarmingly weak, extremities cold, and pulse at times imperceptible. By the free use of cordials, cold air, and other means, she revived, and, the hemorrhage having ceased, the patient was considered to be out of danger. Two hours after, there being in the meantime no return of discharge or weakness, the lady's attendant thought, with me, that we might safely retire, but an hour had scarcely elapsed when we were hastily summoned to see our patient breathe her last.

A healthy young woman was delivered in the Lying-in-Hospital (while I was assistant to the late Dr. Every, in 1800), of her first child, after an easy labour; the placenta was thrown off in the usual time, but there soon came on a most alarming hemorrhage, followed by faintings. By the introduction of the hand and the aid of cordials, the woman was soon relieved from her perilous situation, and appeared to go on well for some hours, when she suddenly, and without any

return of hemorrhage, became weak, fainted, and expired. A *post-mortem* examination threw no light on this case. The uterus, Dr. Evory thought, was rather more relaxed than usual, and it contained a few coagula.

Some years ago, a lady in Temple-street, the mother of several children, had profuse flooding, attended with fainting-fits, after delivery. She had the assistance of three eminent men in consultation; they succeeded in checking the discharge, and the lady appeared to go on favourably for some hours; they took their leave, but in no very long time they were suddenly recalled, and found their patient expiring.

I have reason to think that death is sometimes occasioned by nurse-tenders incautiously changing and shifting patients too soon after delivery. An intelligent medical friend told me, some time ago, that a patient he had attended lost her life in this way. The lady, who had been rather weak, was raised by the nurse-tender to a sitting posture to take some gruel, when she suddenly fell back and expired. A similar accident had nearly occurred lately from similar mismanagement to a patient of mine.

Nurse-tenders, therefore, should be frequently admonished, and apprised of the danger of disturbing, or raising from the recumbent posture, recently delivered patients, especially after hemorrhage.

Although I do not at present mean to treat of the general management of uterine hemorrhage, I think it well to offer a few remarks on the use of opium, which has of late been largely used by some practitioners. I have read accounts of cases of flooding, in which seven or eight hundred drops of tincture of opium were given within six or eight hours, and, as alleged, with the best effects. The opinion which I had long held respecting the nature of the proximate cause of uterine hemorrhage in childbed, and the effects I had often witnessed of large doses of opium on uterine action, led me to suppose that it was not likely, in such large doses, to prove beneficial in the complaint in question. However, the extraordinary success attributed to the practice by some respectable practitioners led me to give it a fair trial, and the result has been a conviction on my mind that opium ought not to be given too freely in floodings attended with great weakness. I have generally observed that, when administered in very large doses, it increases the weakness, disorders the stomach, and tends to suspend the healthy uterine contraction, and prolong rather than check the discharge. It is good practice to give a moderate dose of black drop, or Battley's sedative liquor, combined with burned brandy, volatile aromatic spirit, or Hoffman's liquor, immediately after the birth of the child, when we have reason to apprehend flooding, and the same may be repeated if necessary.

It is generally supposed that if, after the expulsion of the placenta, the uterus be felt well contracted, small, round, and firm over the pubis, there is no reason to apprehend hemorrhage; this may be true to a

certain extent; nevertheless if due care be not taken to maintain this state of salutary contraction by the means already advised, the uterus may relax, and hemorrhage ensue; therefore, the cautious attendant will patiently continue his preventive measures till all immediate danger of hemorrhage shall have subsided, and then apply his pad and roller.

I would here beg to offer a suggestion, for the guidance of the young practitioner in his attendance during the anxious and critical period of childbirth. I would strongly urge him to remain with his patient as much as he possibly can, from the commencement of labour to its termination; his presence will be acceptable to the friends of the patient, comfortable and cheering to herself, and she will have the benefit of seasonable advice and assistance on any of those emergencies which every now and then unexpectedly occur in the progress of labour. But this is not all: the presence of the confidential medical attendant, and his humane and kind deportment, will inspire the sufferer with confidence and hope, and thus, by the well-known influence of mental impressions on the action of the uterus, will tend to lead the case to a speedy and happy issue. I do not pretend to say that such is the invariable result, for I have known cases to go on slowly where the practitioner remained for hours on the spot, and where, during his short absence, pains suddenly increased, and accomplished the delivery before his return; but I have seen more than sufficient to justify me in asserting, that if accoucheurs would remain more at the bedside of the patient than is the practice of the present day, and sometimes pretend to assist, with the intention, as Dr. Denman remarks, of giving confidence to the patient, or composing her mind, the duration of labour and sufferings of the patient would often be abridged; and I dare to say that the success of Dr. Hamilton, who assures us that "no patient under his charge for the last thirty-five years has been above twenty-four hours in labour, and excepting in cases of disproportion, none so long," was more owing to this circumstance than to any direct manual aid he may have afforded.

Several years ago, I was requested by an eminent practitioner to wait with a lady, upon whom he had been some hours in attendance, in labour of her first child, while he paid an urgent visit in a distant part of the city. The labour, he said, was proceeding favourably, the pains strong and regular. On my going into her apartment, the patient manifested discontent and want of confidence, which I could not remove. The labour slackened, the pains became weaker, irregular, and during two hours that I remained, no progress was made, and on his return the doctor was disappointed and surprised at the change that had taken place. Ineffectual pains continued to harass the patient for several hours, when circumstances occurred to require manual aid, and a dead child was extracted with the forceps. My friend, who was an intelligent and observing man, candidly expressed great regret at having left the patient, who would, he thought,

have been safely delivered without assistance, had he remained with her.

Upon another occasion I was hastily called to the assistance of a lady in active labour of her fourth child,—her usual attendant, in whom she had great confidence, being engaged elsewhere; the nurse-tender said the pains were strong, and labour far advanced, and that the lady who always had quick labours would very shortly be well. However, on the lady being told of the absence of her own friend, and seeing a stranger at her bedside she became much dispirited, the labour flagged, and made no advance for a considerable time, till her attendant made his appearance, when pains soon returned, and she was speedily delivered. Cases like these, showing how much the uterine functions are influenced by the state of the mind, are by no means unfrequent and should be borne in mind by practitioners in midwifery.

I wish to record the result of my experience upon another subject which has divided the opinions of physiologists and physicians: I allude to the alleged recurrence of the menstrual discharge during pregnancy. Females have often assured me of their having had their regular monthly discharges during the whole or a portion of the period of pregnancy. On closely investigating these cases, however, I invariably discovered, that the characteristic marks of natural and regular menstruation were for the most part absent. The discharge not returning with the usual regularity as to time, nor continuing uninterruptedly the usual number of days, the fluid discharge also differing in quantity and quality from the true menstrual secretion; and and it is further worthy of remark, that in several cases which came under my immediate observation, females who asserted that they menstruated while pregnant acknowledged that they had not on such occasions certain feelings which accompanied their usual monthly periods. I may, therefore, safely affirm, that I have not, during a pretty extensive practice of forty years, seen a case of regular menstruation during pregnancy, the instances which occurred in my practice of discharges of blood from the vagina during utero-gestation being obviously cases of pure hemorrhage, so that I feel strongly disposed to lay it down as a practical axiom, that pregnant women never menstruate.

I may here be permitted to offer a few remarks on a very important subject which has lately been discussed by Dr. Hamilton, of Edinburgh, and Dr. Collins, of this city. I allude to the practice of artificially dilating the os uteri, with the view of shortening the duration of labour, and I do so chiefly from a wish to inform those gentlemen who formerly attended my lectures, that I still entertain the same opinion of the practice in question which I then endeavoured to inculcate. In the early part of my professional life I happened to be well acquainted with an accoucheur of extraordinary address and dexterity in the operative part of midwifery, particularly in the use of the "lever." This gentleman was in the habit constantly of apply-

ing artificial dilatation in the way recommended by Dr. Hamilton; and having in a few cases witnessed the success of his mode of assisting, I became a convert to the practice, which I adopted for some years, till I was satisfied, by the result of further observation and experience, that although cases did occasionally occur in which labour seemed to have been protracted by want of disposition in the os uteri to dilate, and in which, on using a moderate force with one or two fingers during a pain, I soon effected complete dilatation, and, the head being cleared from the os uteri, pains, excited possibly by the gentle dilating efforts, became more frequent and efficient, and delivery accomplished sooner, perhaps, than otherwise would have been the case; yet that such artificial interference not only frequently failed in hastening delivery, but every now and then evidently appeared to retard the progress of labour, and lay the foundation of local ailment and slow recovery. And having, on my appointment to the Mastership of the Lying-in-Hospital in 1814, well considered the subject, I felt that I should not recommend the mode of assisting in question as a rule of practice to the pupils of the hospital. I have not that very great apprehension with which Dr. Hamilton seems to be impressed, of the injurious consequences likely to arise from the retardation of the *first* stage of labour. Retardation of the *second* stage is more likely to affect the safety of mother and child; and it is not, I am satisfied, by using artificial dilatation with the view of expediting the first, that we are most likely to provide for a speedy and favourable termination of the second stage—often quite the contrary; over-anxiety to accomplish the dilatation, and finish the first stage of labour, has often rendered instrumental delivery necessary in cases which, if left to nature's efforts, would have been finished without the interposition of art, as indeed the experienced gentleman just alluded to has often admitted to me; but he would then add that "by clearing the head from the uterus, we could apply the 'lever' whenever we pleased, and thus save the patient much pain, and ourselves much anxiety and watching." Sure I am that the woman is less likely to suffer injury from a few hours' protraction of labour, if she be otherwise well treated, than from the practice recommended by Dr. Hamilton; and I do think Dr. Collins entitled to the thanks of the junior accoucheur for cautioning him against a practice which is fraught with danger.—*Dublin Quarterly Journal, May* 1858, *p.* 287.

120.—USE OF THE ESSENTIAL OIL OF TURPENTINE AND OPIUM IN LARGE DOSES IN THE TREATMENT OF SEVERE PUERPERAL AFFECTIONS.

In the discussion going on for the last three months at the Academy of Medicine in Paris, and which has attracted so much public attention, puerperal fever has been considered by the most competent authorities as a disease almost universally beyond the resource of art, at least in

the present state of our knowledge; all the means hitherto employed have, almost without exception, proved useless. This melancholy confession of the inefficacy of medicine to subdue an affection which carries off so many women in the flower of their age, is unfortunately, but too well founded when we speak of the severe epidemic form, but ought not, however, to be adopted as literally true. We have lately seen a case of very severe puerperal peritonitis, which M. Antoine has cured by the method above mentioned, and which Velpeau introduced many years ago. We have since seen two cases in Velpeau's wards, both cured in the same way. This plan of treatment is by no means new, for we remember to have used it with success some twenty years ago, but it is not the less worthy of notice. It is the plan of Graves (of Dublin) which Trousseau has long employed with advantage in the treatment of puerperal illnesses; it consists in giving to lying-in women attacked with metro-ovaritis, or phlegmonous inflammation of the broad ligaments, or peritonitis, or uterine phlebitis, &c., &c., opium and essential oil of turpentine in large doses.

Dr. Bonfils has just published, in *extenso*, in the 'Bulletin Therapeutique.' two very interesting cases of this kind. In the first the patient was attacked after her confinement with peritonitis and double pleuro-pneumonia, and was cured of this formidable complication after seven weeks' treatment. The other patient was attacked under similar circumstances, with a very severe general peritonitis, all the puerperal complications were rapidly checked by the plan of treatment recommended, but after the most marked improvement, which promised to end in a perfect recovery, she was seized with symptoms of hectic, which closely resembled that of pulmonary phthisis, and she finally sunk, owing, in all probability, to a purulent infection.

Opium and turpentine were administered in both cases in the following manner:—

In the first case Trousseau prescribed opium in pills, and turpentine in enemata; he gave at first 5 centigrammes of opium, in five pills, in the day; then the dose was raised to 8 centigrammes, in eight pills; then 10 centigrammes, in ten pills. The opium was continued for thirteen days.

Turpentine was administered at first in doses of 10 grammes,* divided into two enemata; one was given morning and evening; then it was gradually increased to 20 grammes, 25 grammes, 30 grammes; this last dose was continued for fifteen days. The following was the formula adopted: essential oil of turpentine, 10, 20, 25, 30 grammes; yolk of an egg; water, 100 grammes; to be divided into two enemata; add to each enema five or six spoonfuls of gum water or linseed. The enema to be retained as long as possible.

In the second case the opium was likewise given in pills, in the dose of five centigrammes continued for three days. The essential oil

* *Gramme*=15·4325 grains Troy. *Centigramme* (100th of a gramme)=0·15432 grain.

of turpentine was administered by the mouth, in capsules, for six days; the patient took every day six capsules, each containing 1 gramme of the essential oil; she took two morning, noon, and night.

M. Bonfils details the following as the physiological phenomena which were noted as occurring in both cases:—

In the second case, immediately after taking the capsules, the patient felt a sensation of intense heat at the pit of the stomach; a few minutes afterwards there was a very complete general reaction, characterised by heat of surface, general perspirations, increase in the volume and frequency of the pulse; then followed in succession confusion of vision, vertigo, stupefaction, and drowsiness, and, after some time, itchiness of the skin.

The physiological phenomena were less pronounced when the turpentine was administered in emenata; they consisted in an immediate sensation of heat in the abdomen, a general but moderate reaction, slight vertigo, some confusion of ideas, slight disturbance of vision, and slight itchiness of the skin. Such were the phenomena which existed in the first case.—*Dublin Hospital Gazette, July* 1, 1858, *p.* 203.

121.—REPORT OF A CASE OF ADHESION OF THE LABIA AFTER CONFINEMENT.

By Edward L. Falloon, Esq., Liverpool.

An elderly female brought a young woman to my study, stating that she had become large of late, and fancied she had a tumour. This person had been attending with me a case of uterine disease, and thought this a similar case. I appointed to see her at her own residence next day, which I accordingly did, and gathered the following history:—

Married upwards of two years; became pregnant soon after marriage, and engaged a medical practitioner to attend her, whose services, however, were not obtainable at the time they were required. Labour came on rapidly, and the poor woman had no one near her but her mother. She states that all went on well; no abrasion or tearing took place so far as she knew, and she made a good recovery. Six weeks afterwards she returned to her husband's bed, when it was found that no connexion could take place without intense pain, causing him to desist, and all future attempts met with a like result. Some months passed away, and about June or July last attempts were renewed, but ineffectually; and so matters remained up to January last, when she was induced, after much persuasion, to allow me to examine her. She presented the appearance of a woman six or seven months advanced in pregnancy, but she stoutly denied the possibility of any such thing. The appearance of the parts was peculiar; perfect union of the labia had taken place from below upwards, where there was a small opening just sufficient to admit the top of the little

finger, and that with pain; at the junction with the perineum there was a cul-de-sac, having no communication with the vagina. The adhesion was perfect, no mere false membrane, but a thick substance. Happening to have my pocket-case, I at once passed a director down into the cavity of the vagina, and then passed one blade of the probe-pointed scissors into the cul-de-sac, and rubbed on the groove until the metal could be felt, and then cut right up. The bleeding was very great per saltum from both sides; pressure and cold failing to check it, I was obliged to put a ligature on both arteries, no easy matter without a proper assistant: I then passed a sponge inside the reflected labia, and passed a T bandage over all.

I then directed my attention to the tumour, and on auscultation could hear distinctly the pulsations of the fœtal heart, enabling me at once to convey the startling intelligence that the tumour was movable, *very benign*, and capable of removal in the natural manner, now that the way was happily made clear, disclosing at once the remarkable physiological fact that pregnancy may take place without consent, direct contact, or connection; for I judge that the pain produced by the effort would prevent even "consent." There must have been abrasion at the time of her confinement, and consequent swelling, causing the labia to meet; adhesive inflammation then set in. The pain produced by any movement of the body rendered rest and quiet necessary; and thus the adhesion became organized and firm, having existed for thirteen months. My patient was up at the end of January, and was doing well. The infant could be felt quite plainly; and she is now convinced that her tumour was a living one. The case is instructive, and as far as my experience goes, unique.—*Lancet, June* 19, 1858, *p.* 603.

122.—OPERATION FOR THE RADICAL CURE OF PROLAPSUS UTERI.

By Francis B. Quinlan, Esq., M.B., T.C.D., Surgeon to St. Vincent's Hospital, Dublin.

[The patient, a woman of 48 years of age, and the mother of five children, had prolapsus on using any exertion whatever, in consequence of a laceration of the perineum, which happened four years since, at her last confinement.]

On examination, I detected the rupture of the perineum to which she had alluded; it was about three quarters of an inch long; it was lined with a substance resembling mucous membrane, and was evidently of some standing. The os uteri looked healthy, and did not present any appearance of congestion. I considered, therefore, that this was a suitable case for the plastic operation on the perineum recommended by Mr. Baker Browne, of London.

After some previous preparation, the bowels having been thoroughly

emptied the day before. on Friday, Aug. 13th, the operation was performed as follows:—The patient having been placed in the position for lithotomy, I dissected down a portion of the left labium, about two inches long, about a third of an inch thick, and extending about an inch and a quarter into the vagina. I made a corresponding section on the right labium, and having rendered the recto-vaginal septum tense by the introduction of a gorget into the rectum, I removed a horse-shoe-shaped piece, composed of the portions dissected from the labia and the mucous membrane of the vagina connecting them. Considerable hemorrhage ensued, which was arrested by compression and cold. Introducing my left forefinger into the rectum, I divided the sphincter ani on both sides, about a quarter of an inch in front of its attachment to the coccyx. Having ascertained, by a careful examination of the piece removed and of the place from which it had been taken, that no portion of mucous membrane was left, I joined together the cut surfaces, by three quilled sutures, at their deep, and four interrupted sutures at their superficial margins. The patient's knees were firmly bound together, and she was removed to bed; two grains of opium were ordered immediately, and a grain every three hours. Finding that the introduction of the catheter was attended with much pain and disturbance of the wound, I ordered the patient to be supplied with a soft sponge, which, being applied when necessary, completely answered the purpose.

Aug. 14. She is going on extremely well; the tongue, however, is becoming brown, and the grain doses of opium are evidently deranging the system. I ordered instead, two grains of acetate of lead, with a quarter of a grain of opium, three times a day. This kept the bowels perfectly quiet. A considerable quantity of flatus has escaped from time to time; this, however, owing to the inaction of the sphincter ani consequent on its division, has not disturbed the wound.

August 18. Two of the superficial and one of the deep sutures removed.

August 19. The remaining superficial and one of the deep sutures removed; the deep suture next the vagina being still left.

August 20. The last suture removed. Firm union is established along the whole cut surfaces. She can now pass water by turning on her face.

August 27. The bowels having been kept confined since the operation, I thought that the parts were sufficiently consolidated to admit of their being moved. Accordingly, a large warm cathartic enema was administered through O'Bierne's tube, and a castor-oil draught given a few hours after. The evacuation of the bowels, although very copious, was not attended with any considerable pain.

Thursday, Sept. 2. She got up and walked about to-day, wearing for the present, as a precautionary measure, the bandage delineated by Mr. B. Browne. The whole track of the operation, comprising about three-quarters of an inch of the old perineum, and about the same

length of the approximated surfaces of the vagina, is firmly joined together. The cicatrix can be felt inside the vagina. The sphincter ani has united, and has completely recovered its tone.

Sept. 4. Discharged.

I have described this case rather minutely, as it is, as far as I can learn, the first instance in which the operation has been performed in Dublin. Judging from the successful result obtained on the present occasion, I have no hesitation in recommending the operation, as simple of performance, and as likely to prove permanently beneficial. I used iron wire in the quilled, and silver wire in the interrupted sutures; however, I should now prefer the silver wire for both; as much less irritating, it being next to impossible to procure the iron wire perfectly free from rust.

With regard to the division of the sphincter ani, I consider that it is indispensable—the more so because, as is shown by the operation for anal fistula, it is a proceeding not attended with any considerable risk.—*Dublin Hospital Gazette, Sept.* 15, 1858, *p.* 277.

123.—ON THE EFFECT OF BELLADONNA IN ARRESTING THE SECRETION OF MILK.

By W. C. B. Fifield, Esq., Weymouth, Mass., U. S. A.

[The action of belladonna in arresting the secretion of milk, and so averting milk abscess, we consider one of the greatest discoveries in therapeutics which has been made of late years. Its action is so decided, and relief so quickly afforded that a remedy more effective could scarcely be desired. Since Dr. Goolden's paper on this subject, republished p. 354, vol. xxxiv, several others have appeared in our pages. Mr. Fifield observes:]

In looking amongst some dusty volumes of old magazines, I find that the use of belladonna in similar cases was known as far back as the year 1829:—

"M. Ranque, chief physician at Hôtel Dieu, at Orleans, employs to diminish the sensibility of the mammary gland, on which the secretion of milk depends, frictions morning and evening upon the breasts with the following liniment:—Laurel water, two ounces; sulphuric ether, one ounce; extract of belladonna, two scruples. M. Ranque prescribes at the same time rigid diet and sudorific drinks. M. Ranque, it is said, employs this liniment with success in engorgements of the testicle after antiphlogistics."—'Journal des Progrès,' 1829, copied into the 'Boston Medical and Surgical Journal' of that year.

The best description of the external use of belladonna, and its favourable effects in threatened milk abscess, is that given by Dr. Schnur, in the 'Dublin Journal' 1834. I find nowhere any mention of the use of atropine as recollected by Dr. Goolden. It will be seen

by the cases given, that it is very doubtful whether colchicum has any effect at all. The editor, after speaking of milk abscess, its cause and treatment, uses the following language :—

"Ranque, impressed with certain theoretical ideas, which it is unnecessary to discuss here, was led to the use of the following liniment:—extract of belladonna, two scruples; laurel water, two ounces; sulphuric ether, one ounce. This must be well shaken before it is used. It is to be rubbed into the breasts as high as the axillæ, morning and evening, and the breast must be covered with a fine flannel soaked in the liniment. This proceeding must be repeated every day until the swelling disappears, which is usually on the second or third day. The ether has a smell which is very disagreeable to some, but they ought to bear with it, for it adds essentially to the efficacy of the remedy. The subject is of great importance, and, at the risk of being tedious, I shall give the whole of what Dr. Schnur says on the following cases :—

E. M., a Jewess, short and slender, was married when thirteen years old, to a husband aged fourteen. Immediately after marriage she became subject to hysteria, and the catamenia grew irregular. On the third year after marriage she became pregnant, and, arriving at her full time, she was delivered of a small but healthy child. She persisted in attempting to nurse her child, although her breasts were ill-developed and her general health far too weakly to authorise the attempt. Six hours after its birth the infant was applied to the breast, when she experienced flying stitches passing through them, which soon amounted to positive and considerable pain. The circumference of the mammæ now increased in size, and in twenty-four hours it was found impossible to extract a drop of milk from them, either by rubbing, pressing, or drawing them. The breasts had lost their proper elastic feel, their surface did not yield to the pressure of the finger, neither was it hot and red like the rest of the skin, but it was white and blanched. Her feet were cold, tongue clean, and the bowels gently opened by a saline aperient. The patient tossed about in her bed, and the pain in her breasts was so excessive as to cause her to rave and faint. Her pulse was small, feeble, and contracted, and she was afflicted with constriction of the chest and spasms of the muscles of the neck. Before my arrival the attendants had tried inunction with almond oil, the application of bags containing dried herbs warmed, fomentations of camomile, &c., and were just going to apply a poultice of linseed meal. Under these circumstances there appeared to be an urgent necessity for calming the general nervous irritability, and diminishing the pain felt in the breasts. To effect this purpose, nothing seemed better calculated than Ranque's liniment, and I therefore caused it to be applied in my presence. After the flannel had been on one hour the skin of the breasts became slightly red, and the patient expressed considerable relief. The tendency to fainting now vanished, and the pulse lost its irritable contracted stroke;

nevertheless, she complained of the smell of the ether, which, she said, gave her the headache, and I subsequently substituted alcohol in its place. With the diminution of pain, the hardness of the breasts likewise subsided, and in forty-eight hours all traces of the local affection vanished. (Might not the remarkable relief from pain be attributed in part to the anæsthetic effect of the ether? How closely Dr. Schnur passed by the discovery!)

In two somewhat similar cases, says Dr. Schnur, Ranque's liniment produced the most beneficial effects, although not so rapidly as in that just related. In both the smell of the ether was complained of, but I persevered in its use, being convinced that it contributes much to the efficacy of the remedy in causing that redness of the skin which seems essential to its action. (Was not the belladonna more rapidly absorbed from an almost blistered surface?) Although these cases prove that this remedy possesses considerable power, (mark the modesty of Dr. Schnur), I by no means wish to assert that it is applicable to all cases, or that its success is invariable. On the contrary, I am sure that the kind of cases to which it is applicable are not very numerous, for it must be recollected that in plethoric, robust women, who have enjoyed a good state of health previous to delivery, antiphlogistic and derivative remedies, such as purgatives, are indispensably necessary, and when administered in proper time, have the best effect, often, although not invariably, enabling us to prevent the formation of abscess or induration of the mammæ. It is in delicate women, of a lean habit and slender form, subject to hysteria or fainting, persons whose constitutions have been impaired by previous illness, hemorrhage after delivery, or by too frequent child-bearing; it is in such persons that Ranque's liniment will be found useful. Its composition, indeed, consisting of narcotics combined with stimulants, seems to point out the cases in which it may prove serviceable."—*Lancet, July* 24, 1858, *p.* 101.

124.—APPLICATION OF BELLADONNA AS AN ANTILACTESCENT.

By William Newman, Esq., Fulbeck, near Grantham.

I have had reason to regard belladonna as an antilactescent, and have resorted to it as such.

1. In cases where suppression of the secretion is advisable; *e. g.*,

(a) Where the child has been stillborn, or has died in the first few days after birth.

(b) Where it is desirable to wean the child even suddenly, the flow of milk still remaining unabated.

2. In cases where engorgement of flat gland has occurred, and lacteal abscess is threatening; *e. g.*,

(a) Where, from existence of flat nipples, injury to the breast from prior abscess, or from deficient secretion of milk, the mother

is. after some short and futile attempt at suckling, obliged to desist; here the gland, though not called into prolonged exercise, is yet excited, and its liability to inflammation thereby increased.

(b) Where the mother has suckled, and is continuing to suckle her child; but in whom, from some accidental cause or other, congestion of the breast has been set up.

I have resorted to belladonna in more than a dozen cases—comprising instances of each one of the classes I have so hastily sketched, and have not been disappointed in any of them. The cessation of the secretion, or the resolution of the engorgement, has very shortly followed the application. The drug has been solely trusted in; and I have not in any case given the routine doses of calomel, salts, &c., often resorted to in similar instances; indeed, no medicine whatever was exhibited.

I have employed the extract softened with nearly an equal part of glycerine; and have applied this in a ring round the breast external to the areola. It has rarely been required for more than twenty-four hours.

How far it may be possible to check the secretion of milk in one breast on account of threatened abscess, allowing the child at the same time to continue sucking the other one, I am quite uncertain. No case of the kind has yet occurred to me; but I should fear the influence of the belladonna upon the child. No inconvenience has resulted to the mother in the above cases, save that in one instance there was dilatation of the pupils with intolerance of light for a short time.

I would simply draw attention, in closing this short notice, to the great comfort and advantage of supporting the breast in any of the states I have referred to. A handkerchief placed under the gland, with its ends tied round the neck, appears to have more in its favour than the employment of strips of bandage or of adhesive plaster.—*British Med. Journal, May* 29, 1858. *p.* 430.

125.—*Iodide of Potassium for Dispersion of the Milk.*—M. Roussel, the Professor of Clinical Midwifery at Bourdeaux, having observed the effect of iodide of potassium in diminishing the milk when given in the non-puerperal condition, resolved to administer it in cases in which the dispersion of this secretion was desirable. A woman, who suffered from bad chapped nipples, had great and very painful engorgement of the breasts, attended with much fever. The iodide was given, and by the next day the pain and fever had disappeared, its employment for three days rendering the cure of a tumefaction that threatened abscess complete. M. Roussel has since then tried it in twenty cases, and always with success. After the cure, the milk returns again two or three days after the suspension of the iodide. Its action is more decided in the dose of from six to eight

grains *per diem* than when given in larger quantities. The excessive secretion of milk may be prevented or moderated, by administering it on the first or second day after delivery.—*Gaz. des Hopit.* No. 75.—*Med. Times and Gazette, July* 10, 1858, *p.* 43.

126.—*The Differential Diagnosis of Ovarian Dropsy and Ascites.*—No fewer than four cases have recently come under our notice in which patients suffering from ovarian dropsy had been subjected to prolonged diuretic and mercurial medication, in the belief that the disease was hepatic ascites. In one case, a short time ago, in a large metropolitan hospital, the reverse mistake was made, and the peritoneal cavity injected with iodine, in the hope of obliterating an ovarian cyst, which, as the autopsy a few days afterwards proved, did not exist. Rumour states that one or two other accidents of the same kind have occurred since the iodine-injection plan came into vogue, but we are not in a position to substantiate them. Facts like these prove that the differential diagnosis between these two affections is either not so generally understood as it ought to be, or else that it is a matter of extreme difficulty. Now, there is one sign which hitherto we have never found to fail, but which is, we believe, as compared with its value, but little known. In more than one work on the diseases of women we find no mention of this symptom, although in extreme cases it is the only one which is available. The sign referred to is percussion of the lumbo-lateral region. If in a case of ascites in which the distension is so great that the hydrostatic line of level in front is not changed by posture—and it must be remembered that only in ovarian cases in which the cyst is so large as to simulate this extreme condition ought any difficulty to occur—if, in such a case, the patient be made to sit up in bed, and the loins be percussed, it will be found that the note is the same (usually dull) on both sides. If an ovarian case, no matter how great the distension, be treated in the same way, one loin will be found to be clear, and the other quite dull. The explanation is obvious; in ascites the air-containing coils of gut float as far forwards as their mesenteric attachment will permit, while in the case of an ovarian cyst, they are pushed over to the healthy side. It is not easy to conceive any condition of things, excepting entire exclusion of air from the whole tract of intestines, which could diminish the trust-worthiness of this symptom. It indicates also, with unfailing accuracy, on which side the ovarian cyst, if it exist, has originated.—*Med. Times and Gazette, June* 5, 1858, *p.* 574.

127.—SUCCESSFUL CASE OF OVARIOTOMY.

Under the care of Spencer Wells, Esq., Samaritan Hospital.

The following case is of importance just now that the question, "Is ovariotomy justifiable?" is so warmly debated. It is additionally

interesting as being the second successful case of ovariotomy Mr. Spencer Wells has had at the Samaritan Hospital within the last six months.

M. R., a married woman, aged 38, was sent to Mr. Wells on the 10th of July last, by Mr. Ottaway, of Dover. She was married in 1851; has had three children, but no miscarriages. Her youngest child is two years and four months old. Was in good health up to the birth of the last child; but the abdomen did not diminish in size so much as after her previous confinement. She cannot say when she first perceived any distinct tumour; but the swelling of the abdomen gradually increased after her confinement until March last, when Mr. Ottaway tapped her, and removed eighteen quarts of clear, thin fluid. The sac filled again rapidly, and Mr. Ottaway tapped a second time early in June, removing seventeen quarts of a thicker fluid. His impression was that there was but one cyst. It was six weeks after this tapping when she came to town, and she was then becoming oppressed by the quantity of fluid. The catamenia had been generally regular; but had not appeared for eleven weeks until the day she came to town. Owing to repairs going on at the hospital it was impossible to admit her, and as she became much distressed in her breathing by the rapid accumulation of fluid, Mr. Wells tapped her at her lodging, on the 15th of July, and removed fourteen quarts of thick albuminous fluid.

The sac refilled rapidly, and the patient was admitted to the Samaritan Hospital on the 2nd of August. She was very desirous of having the cyst removed, although the danger of the operation was fairly put before her, and as her general health was pretty good, and she was suffering from the rapid accumulation of fluid in the cyst, it was agreed in consultation on the 9th of August that her wish should be gratified.

On the 11th of August, Mr. Spencer Wells performed the operation. Dr. Richardson administered the Vienna mixture of one part of chloroform to six parts of ether, as it was very important to obviate after-vomiting. She took ice for two hours before operation with the same object. Dr. Graily Hewitt noted the time occupied by the different steps of the operation, as follows:—Inhalation commenced, 2.14 p.m. Incision through abdominal parietes, 2.23. Trocar introduced, 2.27. Cyst empted, 2.37. Peduncle tied, 2.59. Wound closed, 3.5. It will thus be seen that the whole operation, from the commencement of the abdominal incision to its complete closure occupied forty minutes, ten minutes of this being taken up by the flowing of the fluid through the trocar. Twenty minutes was required to separate the cyst from its attachments. The cyst weighed 1lb. 5oz., and the contents 29lb. 10oz.

It is unnecessary to describe the operation minutely. Suffice it to say that it was the usual operation by small incision, in the following stages:—

1. Incision through abdominal parietes in linea alba, three inches in length, half way between umbilicus and symphysis pubis, laying bare the covering of the cyst.

2. Introduction of trocar into cyst (which was fixed by passing a loop of strong twine through it), and emptying of cyst.

3. Separation of cyst from its attachments. There was unusual difficulty and some unnecessary delay in this stage of the operation, as it was, in the first place, not easy to make out the exact line of demarcation between the cyst and its coverings, and it was necessary to lengthen the incision; and secondly, because there were some irregular outgrowths from the right wall of the cyst, consisting of an aggregation of small multilocular cysts, which were firmly attached to the under surface of the liver and the coats of the gall bladder, and great care was necessary in the separation.

4. Ligature of the peduncle. This was effected by transfixing and tying in four separate portions, each the breadth of a finger. The portion left was long enough to permit of being fixed between the edges of the wound at its lower angle.

5. Closure of the wound. This was done by six harelip pins and the figure-of-8 suture, as in harelip. A broad flannel belt was fastened round the abdomen. The lowest pin transfixed both edges of the wound and the peduncle.

The woman was much depressed for about an hour after the operation, and vomited several times, but soon rallied, and said she was "very comfortable" at night. Pulse 140. She took two grains of opium and some iced brandy and water as soon as the vomiting which followed the operation ceased, and a one-grain opium pill was given every three hours.

August 12, first day after operation.—Has slept well. Says she does not feel so ill as she has done after her labours. Complains of some oppression at the upper part of the chest, and difficulty of breathing, but not more than she has done after simple tapping. Nausea and occasional vomiting are rather troublesome, and morphia suppositories, one-third of a grain in each, were substituted for the opium pills. She takes brandy and arrowroot, and has ice to suck. Pulse 140 all day.

2nd day. Still going on well. The wound appears to be healed. Some fetid discharge from peduncle. Pulse 130. Morphia suppositories are kept up every three or four hours. Urine is removed by the catheter twice daily. Takes iced brandy and water, and wine and water freely. Pulse 120 at night.

3rd day. Quite as well all the morning, but in the afternoon diarrhœa came on, and she had four motions. Some pain in the abdomen for the first time, lasting a few minutes after each motion. Pulse 140. Tongue dry and brownish. A mixture of chloric ether, aromatic confection, and peppermint water was ordered to be taken after each motion, and the suppositories continued. She had one

very copious feculent evacuation at night, and then the bowels kept quiet.

4th day. Much better again. Pulse 125. No pain. Eat some boiled sole. Wine and suppositories continued.

5th day. Mr. Wells removed five of the pins, and found the edges of the wound perfectly united, except where the peduncle, transfixed by the lowest pin, keeps the lower angle open. Pulse 120. Eats and sleeps well, and there is no pain.

6th day. Bowels open spontaneously. The pin through the peduncle removed and the ligature fastened by plaister to the integuments. Pulse 120. Towards evening some smarting of urethra and irritability of bladder came on, apparently due to the urine being very highly charged with lithate of ammonia. Relief was afforded by suppositories, and the use of a sponge wetted with cold lead and opium lotion. To drink barley-water freely.

7th day. Irritability of bladder much diminished. Pulse 120. Bowels open again this morning. To take a suppository twice only during the day.

8th day. Pulse down to 100 for first time since operation. Some irritability of bladder continues. Is hungry, and takes a good deal of beef-tea, arrowroot, and has had a slice of roast meat. Sleeps well. She has sat up in bed for some time, and did some needle-work.

9th day. Feels better and better every day. Pulse 100, feeble. The peduncle had completely sloughed through except at one spot, which Mr. Wells secured by a fresh ligature, and then removed the old one. An ounce of the mistura vini gallici of the Pharmacopœia ordered every three hours. She takes a suppository at bed-time, and another when she wakes about 3 a.m.

10th day. The new ligature on remnant of peduncle came away.

August 25. A fortnight after operation. The wound is quite closed, and she may be said to be convalescent.—*Med. Times and Gazette, Aug.* 28, 1858, *p.* 218.

128.—ON DILATATION OF THE FEMALE URETHRA BY FLUID PRESSURE.

By T. Spencer Wells, Esq., Lecturer on Surgery at the Grosvenor-place School, Surgeon to the Samaritan Hospital, &c.

[The use of sponge tents and metallic dilatation is very unsatisfactory, as a means of dilating the female urethra, and especially, if assisted by division of the mucous membrane, is very liable to be followed by permanent incontinence of urine. Rapid dilatation is less liable to this than a more gradual and cautious proceeding, and is therefore always to be effected in preference.]

Dilatation by means of Weiss's dilator is a very easy and simple

proceeding, and under the use of chloroform, of course, quite painless; but I have often seen that a more uniform dilatation would be better than the partial pressure exerted by the divisions of this instrument when separated. The urethra is dragged into a sort of triangle, and the greatest pressure falls, not upon the whole circumference of the canal, but upon three points. This first led me to use sponge-sents, but their action is too slow to admit of the prolonged use of chloroform, and it is extremely painful without some anæsthetics. A very interesting case occurred in May, 1857, at the Samaritan Hospital, which almost led me to declare that I would never use sponge-tents again for this purpose.

An unmarried female, 23 years of age, applied at the out-patient-room, with hæmaturia to a considerable extent. She was sounded, and it was thought that a stone was felt, so she was sent round to my house. I made a very careful examination with a hollow sound, injecting the bladder through it, and examining the cavity at various stages of distension, but I could feel no stone. I felt an unusual roughness near the neck of the bladder, and thought that some foreign body might be fixed in the coats of the organ. I accordingly suggested to the patient that she might possibly have sat down upon something which had accidentally slipped into the urethra, but this she said she was quite sure was not the case. This convinced me that nothing had been introduced.

Gallic acid was given freely, and with some temporary good effect, but the hemorrhage returned to a rather alarming extent, and the patient was admitted as an in-patient under my care. The blood passed nearly pure. It was not mixed with the urine, which was quite normal, but flowed after the water was passed. There was no vascular growth to be seen in the urethra, or at its orifice; but, on renewed sounding, in consultation with my colleagues, something soft and irregular, like a polypus, was felt at the neck of the bladder. This I determined to remove, and used a sponge-tent to dilate the urethra. In two hours the canal was dilated sufficiently to admit my finger, but the process had been horribly painful. The patient was quite faint, and covered with a profuse perspiration from the severity of the pain. However, the urethra was so much dilated that I could introduce my finger easily, and feel a soft velvety growth attached to the mucous membrane of the bladder, just beyond the opening of the urethra into the bladder. Any one who has ever had his finger within the bladder of a living female, knows how tightly it is constricted at the neck. This constriction led to some difficulty in manipulation, but I was able to introduce, guided by the finger, a pair of fine blunt-pointed scissors, curved on the flat, and with them I cut away what turned out to be a villous growth about the size and shape of a cherry, with a broad base. The result was very satisfactory so far as the hemorrhage was concerned; but for ten days, I feared that per-

manent incontinence of urine would be the result, as it flowed involuntarily for that time. But the power of retention gradually returned, and I saw the patient last week in the out-patient's room with some trifling affection of the eyelid, when she assured me that she had had no return of hæmaturia, and that all irritation of the bladder had disappeared. Fortunate as this result was, however, it taught me to look for something better than a sponge-tent as a dilator of the female urethra.

About this time Dr. James Arnott lent me one of his instruments, which I used to dilate a stricture of the male urethra, and I determined to adopt the same principle to the dilatation of the female urethra. Towards the end of last year Mr. Henry Thompson showed me a modification of Dr. Arnott's instrument, which he had contrived for the purpose of compressing the prostate by dilating the prostatic portion of the urethra. I at once saw that a very slight modification of this instrument was exactly what was wanted for the female urethra; but it was not until last month that I had need of such an instrument. I was then consulted by a lady in whose bladder I detected a stone. In an ordinary case of the kind I should have crushed it at once, but in this case there was so much irritability of bladder, the urine was so loaded with mucus, and so soon became ammoniacal, that I was doubtful whether it would not be wiser to run the risk of incontinence after dilatation, than increase the irritability of the bladder by the use of the lithotrite, and the escape of the fragments of stone. I, therefore, advised a consultation with Sir Benjamin Brodie, and acted on his advice, which was to inject the bladder with water daily for a few days, and then break the stone, being prepared at any time to dilate the urethra and empty the bladder, should any undue irritation come on. So far all has gone on well. The irritation diminished directly the stone was broken, and very little is left of it after three sittings.

But the instrument I had prepared for this case by Mr. Coxeter I have had an opportunity of trying in another.

It consists of a female catheter, a piece of India-rubber tubing, fitting closely over the catheter, an elastic tube furnished with a stop-cock, and a syringe. On filling the syringe with water, fixing it to the end of the elastic tube, and injecting the water from the syringe into the catheter, the water is forced through small openings near the end of the catheter, and distends the India-rubber tubing which covers it. When the syringe is emptied the stop-cock can be turned, and the syringe refilled. The India-rubber dilates at first in a globular form, afterwards in a more oblong direction, especially if any lateral pressure be made on it. In this way the urethra may be very gradually dilated with an equal pressure in every direction until its diameter exceeds an inch. The length of the elastic tube permits of the use of the instru-

ment beneath the bed-clothes without the least exposure of the patient.

It is hardly necessary to describe the mode of using it, but I may say that the covered catheter is oiled or covered with some greasy substance. The only thing in common use which appears to spoil the India-rubber is turpentine. When oiled it is introduced as an ordinary catheter; and so held that the centre of the distending portion is kept just within the meatus. There is some little tendency in the bladder to force the instrument outwards, but slight gentle pressure easily overcomes this. After one syringeful of water has been gradually injected, a second may be used, and a third if very great dilatation be required. On ceasing the injection the distended tube is at first held very tightly—at least it was in the only case I have had,—but after a minute or two it may be moved and easily withdrawn. The fore-finger, oiled, can then be inserted at once into the bladder, and followed by any instrument of equal size.

The effect was admirable in my patient. There were reasons against giving chloroform or ether, so that I was able to judge of the rapidity and painlessness of the process as compared with the sponge tent. There was some pain, but it was by no means excessive, and the dilatation did not occupy more than ten minutes, yet I was able to introduce a pair of bullet forceps, and remove an oblong foreign body with great ease, and after the third day the retentive power of the bladder has been perfect.

I intend to take the first opportunity that occurs in the dissecting-room of testing the power of a similar instrument on the male urethra, after opening it as for lithotomy. It may not be generally known that lithotomy—or rather lithectasy—on the horse is performed on the principle of dilating the prostatic urethra. The staff is passed along the urethra, an opening is made into its membranous portion from the perineum, and an empty bladder is then carried along the groove of the staff into the horse's bladder. The staff is withdrawn, and the prostatic urethra dilated by injecting the introduced bladder. Sufficient dilatation can be obtained in this way for the removal of very large stones; and I think all that we know of lithectasy in the human male leads to the conclusion that we only want a more perfect means of dilating the prostatic urethra to do away with the most formidable dangers of lithotomy. Some such instrument as that which has answered so well for the female urethra will, I trust, prove useful in this way.

I have only to add that Mr. Coxeter makes the instrument above described extremely well.—*Medical Times and Gazette, July* 24, 1858, *p.* 84.

129.—PRACTICAL OBSERVATIONS ON THE USE OF THE ECRASEUR IN POLYPI OF THE UTERUS.

By Dr. Robert Johns, Member of the Council of the Surgical Society of Ireland, &c.

[A lady, ten years married, but never pregnant, consulted the author last year, stating that during the last two years she had been subject to severe menorrhagia, often passing large clots; and also suffering from severe uterine pain, diarrhœa, sickness, and other symptoms arising from loss of blood. She had a very anæmic, even malignant aspect.]

On making a vaginal digital examination, I found a fibrous polypus, about the size of a chesnut, projecting from the os uteri, which, by very slight traction, was brought down into the vagina; it was attached to the inner and anterior surface of the cervix, about an inch from the os, by a pedicle of about two inches long, and half an inch thick; the os was patulous, flaccid, and dilatable. Having determined to remove the tumour by "écrasement linéaire," I explained to my patient what I proposed doing, to which she willingly consented, at the same time saying that she would submit to any treatment to be again restored to health. As she expected to be unwell on the day or so following, I deferred any interference until after the period had passed over, but I ordered a tonic mixture, containing the ammonio-tartrate of iron, &c.

September 20th. The catamenia have ceased for three days. Ordered to have the bowels well freed, and to repeat the tonic iron mixture.

23rd. This morning I found my patient in a state of great excitement, and very hysterical, Not deeming her a fit subject for chloroform, I gave her some wine, which had the desired effect. Having then placed her in the position for lithotomy—which I consider preferable to any other in such cases, when operating on virgins, on females like Mrs. D., whose vagina is not much dilated nor very dilatable without inflicting much unnecessary pain, or on those whose os uteri is very high up—I then proceeded thus. Having gradually and gently introduced the first two fingers of my right hand into the vagina, and having found the polypus in the position before described, I passed a finger on each side of its pedicle, a little above its insertion into the tumour, and drew it down as near as possible to the perineum; having now replaced my fingers by the chain of the écraseur (which then surrounded the tumour), I shortened it until constriction was produced, and removed the polypus *very slowly* and steadily. There was not a drop of blood shed either during or subsequent to the écrasement, nor did my patient experience the least pain. A very trifling vaginal, discoloured discharge, caused by the debris of the pedicle, set in that evening, and continued for three days. Cold water vaginal

injections, having been daily employed, on the fifth day she was up and about her house, and not a vestige of the pedicle could be discovered by the "toucher;" but as the os was still very patulous, and felt rough, an examination with the speculum was instituted, when an ulcer was seen extending about two-thirds around the os uteri, which yielded very quickly to a few applications of solid nitrate of silver, when the os closed up to its normal state. This lady called to visit me on the 3rd of December, when in appearance she was greatly changed for the better, as she had regained her natural healthy colour, and had lost the malignant aspect. She stated that her periods had become perfectly regular and painless; she had no vaginal discharge of any description, and, in fact, that she was in better health than she had enjoyed for years.

The following facts, I think, are fairly deducible:—

1. That vaginal hemorrhage, continuing for any length of time, being accompanied by clots of blood, assuming particular shapes, and having been preceded by an increase of flow at the catamenial periods, is strong presumptive evidence of the existence of polypus of the uterus.

2. That the situation of the tumour, whether in the uterus or descended into the vagina, does not seem to exercise any effect in increasing or decreasing the hemorrhage.

3. That the amount of blood lost in this disease is not in proportion to the magnitude of the tumour.

4. That ulceration of the os or cervix uteri is a very fruitful source of hemorrhage in polypial disease.

5. That it is not by any means necessary to draw the tumour externally to the vagina, in order to remove it by linear écrasement.

6. That there is no advantage derivable from écrasing the pedicle high up.

7. That the écraseur is a valuable instrument if properly employed; that is, very SLOWLY and *steadily;* but, if not, its use is very doubtful, if not hazardous.—*Dublin Quarterly Journal, May*, 1858, *p.* 322.

130.—ON THE USE OF CHLOROFORM IN THE TREATMENT OF PUERPERAL CONVULSIONS.

By Dr. R. T. TRACY, L.R.C.S.I., Physician to the Melbourne Lying-in Hospital.

[The following interesting paper is from the 'Australian Medical Journal,' published at Melbourne. We heartily congratulate our fellow-countrymen in this distant part of the world that they possess such an excellent medical staff as this journal indicates. Dr. Tracy says:—]

Among the many serious complications that may occur during the progress of any individual case of midwifery, I think most medical men will agree with me, that none cause greater anxiety, or are of more grave importance, than the different varieties of puerperal convulsions; the patient presents such a frightful spectacle during the paroxysm, as to appear to her friends in a thoroughly hopeless condition and the anxious dependence placed in the medical attendant, at such a critical time, should make us careful to think well over the treatment of such cases, that we may be able to act promptly and on definite principles.

It is not my intention in this short communication to dwell on the well-known classification of these cases, or to go over that which all my medical brethren can so easily refer to in any of the established works on midwifery. My object is merely to make a practical note on the treatment of these cases, and thus draw the attention of some of my readers to a line of treatment which may not have struck them before. I am the more induced to do so because I have mentioned the facts to some medical friends who seemed not to have thought the treatment likely to be safe or beneficial. The ordinary system of treating those fits when they present anything of a sthenic character, has, doubtless, been thoroughly antiphlogistic, bleeding being deemed the sheet anchor, and this remedy I have seen pushed to such an extent as to render the patient's after recovery exceedingly tedious.

I have had several cases of puerperal convulsions under my care during the last six years in Melbourne, and although I did not lose any of these patients, still I felt anything but satisfied; the recoveries were in some very protracted, and in most of them the fits continued intensely violent long after very active treatment had been used, and seemed only to yield when the patient became, as it were, worn out and exhausted; from these results, and thinking over the nature of these attacks, I came to the conclusion that as derangement of the *nervous* system for the time being is no doubt the "fons et origo mali" —these fits occurring from a particular exciting cause, in persons not subject to similar attacks at any other period than during or soon after labour, it followed that a remedy like chloroform seemed to promise the best results.

I need hardly say that I do not for a moment pretend to be the originator of this treatment, I know that it has been so used at home, and I have known it used by more than one esteemed medical friend in this city. I only mean to convey that, for the reasons above mentioned, I became convinced that it might be safely and hopefully administered.

I have been successful in the trials I have made of it as yet, it has answered all the expectations I had formed of it; in order to illustrate its advantages I will now relate a case which afforded me the opportunity of contrasting two different plans of treatment in the same individual.

In March, 1853, I was called to attend Mrs. J., residing in Collingwood; it was her first accouchement, the labour was severe, the patient a plethoric young woman, the child's head very large. Just as the last violent pain caused the head to emerge from the vagina, a terrible convulsion came on; I completed the delivery of the child at once, and the placenta was speedily expelled; I then hoped the violence of the fits would moderate. Contrary to my expectation, they increased in frequency and violence, and the struggles of the poor patient were so great that it took the full strength of two or three strong people to prevent her injuring herself. I bled her largely, used the cold douche to the head assiduously, gave large fœtid enemata containing turpentine, and applied mustard cataplasms to the legs. Dr. Wilkie was seen in consultation and agreed in the treatment, the cold douche seemed to have some little effect in lessening the force of the fits, but though it was well applied, and the bleeding repeated, there was not much alleviation of the symptoms during that day; the attacks recurring as often as every hour.

On the next day the patient was still unconscious, and the fits returned as often but not with such strength. On the third day several attacks; still unconscious; from that time to the sixth day she remained in the same stupid state, but had little or no convulsion after the third day; on the morning of the seventh day she knew those about her, and from that time slowly recovered; during this period I had the head shaved, leeches applied to the temples, the nape of the neck blistered, and gave calomel purgatives. The infant was healthy and after some time she was able to suckle it.

On the 10th October, 1854, I attended Mrs. J., and she was delivered of a healthy child without any attack of convulsions, or any other bad symptom, and made a safe and rapid recovery.

On the 25th of last month (May 1858,) I again attended her, the labour was in every way natural and when I left her at 2 a.m. she was very well indeed; at 4 a.m. I was called to see her in great haste, and found her in a truly frightful convulsion, quite as bad as in her first labour. Having used chloroform in some cases during the interval, I determined to give it to her, but on consideration of her very plethoric habit and the congested state of her system I thought it well to take some blood away, though I had not done so with others; I also knew the chloroform would act more rapidly after bleeding, and the fits were so bad, I was very anxious to subdue them as promptly as possible. I therefore took away about ten ounces of blood and then caused her to inhale chloroform; the effect was almost magical, the sleep that, ensued quite peaceful, and no symptoms of a return of the fit for two hours. She then began to struggle and I at once gave a little more chloroform, which put a stop to it, and she remained quiet for about three hours. During the twelve hours after the first seizure chloroform was given four times, for about two minutes at each inhala-

tion, and the contrast between the convulsions under this and the former treatment by bleeding alone was indeed remarkable. I saw her during the night, and she slept soundly. About six a.m., next day, 26th of May, she awoke perfectly rational, and had no return of the convulsion nor any unpleasant symptom. She was able to suckle her infant on the fourth day, and was out of bed on the tenth.

The whole quantity of chloroform used in this case did not exceed an ounce.

My friend, Surgeon Watkins, of Pitfield, to whom I was mentioning this treatment within the last few days, has kindly furnished me with the following note of a case in his own practice.

"I was called to a young woman in her first labour, who had been in convulsions for several hours. She was perfectly insensible when I saw her. I bled her freely, and having ascertained the presentation to be natural, endeavoured to deliver at once with the forceps, but was foiled in my attempts by the violence of the convulsions. I then determined to try chloroform, as I did not see that it could do harm, if cautiously administered. The patient was quickly under its influence, the convulsions subsided, and I was enabled to complete the delivery. The patient lived thirty miles from my residence, and had been for quite nine hours in convulsions by the time I arrived. The convulsions returned slightly, and the patient remained unconscious for a few hours. She made a rapid and most satisfactory recovery, being up and about in a week. I should not hesitate to use the chloroform again in similar cases."

To sum up—I would advise the administration of chloroform in all ordinary cases of puerperal convulsions; and when the attack is extremely violent, and the patient young and plethoric, to take away a little blood previous to its inhalation.—*Australian Med. Journal, July* 1858, *p.* 184.

131.—ON THE AVERAGE DURATION OF LIFE OF WOMEN SUFFERING FROM CANCER OF THE BREAST.

By James Paget, Esq.

Though the author was formerly of opinion that women affected with cancer of the breast, if not operated upon, had, on an average, fifteen months longer to live than those who had been, he has now come to the opposite opinion, by a more minute statistical analysis of 139 cases.

In 75 cases where no operation was performed, the average duration of life, from the first stage of the disease, was 48 months; while in 64 cases where the patients survived the operation, it was 52 months.

The longest lifetime enjoyed by one of the first class was 216 months, the shortest 7 months; the longest of the latter class was 186, the shortest 7½ months.

	Of 100 operated upon.	Of 100 not operated upon.
Died in the 1st year, ...	4·7 ...	8·9
„ 2nd „ ...	6·25 ...	22·6
„ 3rd „ ...	21·8 ...	24·0
„ 4th „ ...	14·0 ...	9·37
„ 5th „ ...	20·0 ...	7·3
„ 6th „ ...	11·0 ...	5·3
„ 7th „ ...	93·7 ...	9.37
„ 8th „ ...	3·12 ...	2·66
During the following years, ...	9·37 ...	12·0

—*L'Union Médicale.—Dublin Hospital Gazette, Sep.* 15, 1858, *p.* 287.

MISCELLANEOUS SUBJECTS.

132.—A FEW REMARKS ON HOMŒOPATHY.

By Dr. J. Y. Simpson, F.R.S.E., Professor of Midwifery, University of Edinburgh; Physician Accoucheur to the Queen for Scotland, &c.

[We strongly recommend to all medical men, and to the public at large, the perusal of Dr. Simpson's work on homœopathy. It not only shows the principles of this extraordinary delusion, but ably confutes them. Perhaps the oddest part of this system is, the doses of medicine given by its followers. It is of little use arguing with people on the laws which Nature observes in the cure of diseases, as they cannot understand them, except by a long course of study and practice; but they can understand arithmetic, and therefore will perceive the ridiculous state to which homœopathy is reduced by the following calculations from Dr. Simpson's work.]

There are four series of "doses," "potencies," "preparations," "attenuations," "divisions," "degrees of division," "dynamizations" or "dilutions" (for these terms are used synonymously), in use among homœopathic practitioners: namely,—1. The Lower; 2. The Middle; 3. The Higher; and 4. The Highest potencies. Dr. Hempel, in his late work on the homœopathic materia medica, gives the following definitions of these four potencies or attenuations:—

1. "The Lower potencies or preparations range from the original forms of drugs (tinctures, or primitive chemical, vegetable, mineral, or metallic substances) up to the 6th attenuation."

2. "The Middle potencies (range) from the 6th to the 30th attenuation."

3. "The Higher potencies from the 30th to the 200th."

4. "The Highest potencies from the 200th to any attenuation above that number."

"All these different potencies are used," says Dr. Hempel, "by their respective adherents, and are proclaimed by them as *the best and most useful;* or rather, only useful preparations" (p. 39.)

Without attempting to obtain (what seems really unattainable) some computatory idea of the extent to which a grain or a drop of any drug is attenuated or diluted, in order to form one of these "high potencies," let us simply content ourselves with tracing the degree to which a grain or a drop of a drug requires to be attenuated, in order to form only the "lower" or "middle" potencies of homœopathic practitioners;—that is to say, the attenuations, dilutions, or potencies, which range from 1 to 30.

Several homœopathic works give the following, as their standard table, to show the amount of a grain or drop (these two quantities or terms being usually regarded as synonymous) of any drug, which exists in the different "middle" and "lower" dilutions of homœopathy:—

Table of Quantity of any Drug in different Attenuations, or Potencies, from the 1st to the 30th.

First,	=	One Hundredth of a Drop or Grain.
Second,	=	One Ten-thousandth do.
Third,	=	One Millionth do.
Sixth,	=	One Billionth do.
Ninth,	=	One Trillionth do.
Twelfth,	=	One Quadrillionth do.
Fifteenth,	=	One Quintillionth do.
Eighteenth,	=	One Sextillionth do.
Twenty-first,	=	One Septillionth do.
Twenty-fourth,	=	One Octillionth do.
Twenty-seventh,	=	One Nonillionth do.
Thirtieth,	=	One Decillionth do.

"The fraction," says Hempel, p. 36, "of the primitive drop in each attenuation can easily be ascertained, since all the denominators of these fractions increase as the powers of 100. In the first attenuation, each drop contains the 100th part of the primitive drop; in the second, the 10,000th; in the third, the 1,000,000th part; &c., so that, in the 30th, each drop will contain the 100^{30}th or $1{,}000{,}000^{10}$th part of the primitive drop; or, in other words, its 1,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000th part. Some authorities, however, as Dr. Forbes, calculate a decillionth as still greater,—reckoning it as a unit followed by 72 ciphers, instead of a unit followed only by 60 ciphers, as I have always (to the advantage of the homœopathists) calculated it in the preceding chapters and in the present appendix. "The billionth attenuation" says Dr. Hempel (of America) "in our language, would contain three times three ciphers; whereas, in the German, it is meant to contain four times three ciphers." In the preceding chapters, I have, in accordance with the usual practice of English arithmeticians, always calculated a billion as a unity followed by 12 ciphers. The smaller numbers, however, yield sufficiently satisfactory and startling results, without having recourse to the higher, and perhaps more correct, formulæ.

At pages 64, 65, I have cited Hahnemann averring that, if a desponding and suicidal patient will swallow, or rather smell merely, a quintillionth of a grain of gold, he will be restored, within an hour, to peace of mind and love of life; and I further stated, that to reduce, according to Hahnemann's own rules, one single grain of gold (or, of course, a single grain of any other homœopathic drug) down to quintillionths,—or, in other words, to the 15th attenuation

or potency,—the single grain of the medicine would require to be duly mixed through a mass of sugar proportionately equal to at least FIFTY globes or worlds of the size of the entire EARTH. The quantity of sugar actually necessary to reduce one whole grain to quintillionths, would be a mass equal to SIXTY-ONE globes the size of the Earth. To prove this, let me subjoin one or two explanatory remarks and the formula for this computation.

The subjoined arithmetical formula shows, first, the result when we divide a quintillion of grains (the number contained in the first line in the formula below) by 240 (see second line), or the average number of grains of sugar, or sugar of milk, found by experiment to be contained in a cubic inch. Secondly, the quotient shows the number of cubic inches (as stated in third line) contained in a quintillion of grains of sugar; and this number, when again divided by the number of cubic inches in a cubic mile (stated in fourth line), yields the number of cubic miles of sugar contained in a quintillion grains of it. Lastly, when we divide this number of cubic miles (as given in fifth line) by the number of cubic miles contained in the mass of the Earth (as given in sixth line), we obtain the number of masses of sugar equal to the dimensions of the Earth required to make a quintillion of grains of sugar. Thus,—

$$\frac{1{,}000{,}000{,}000{,}000{,}000{,}000{,}000{,}000{,}000}{240} \text{ cubic inches.}$$

$$= \frac{4{,}166{,}667\,000{,}000{,}000{,}000{,}000{,}000{,}000}{254{,}358{,}061{,}056{,}000} \text{ cubic miles.}$$

$$= \frac{16.381{,}000{,}000.000}{263{,}900{,}000{,}000} = 61 \text{ globes the bulk of the Earth.}$$

A quintillion of grains is expressed arithmetically by unity followed by thirty ciphers, as in the first line. A quintillion divided by 240, the number of grains contained in a cubic inch of sugar, gives 4167 quadrillion cubic inches of sugar in the quintillion of grains. These 4167 quadrillion cubic inches divided by the number of cubic inches in a cubic mile (viz., 254,358,061,056,000), or, two hundred and fifty four billions, three hundred and fifty-eight thousand and sixty-one millions, and fifty-six thousand,—gives $16\frac{2}{5}$ billions of cubic inches as the size of a mass of sugar containing a quintillion grains of sugar. This again, divided by 263,900 000,000 (or two hundred and sixty-three thousand nine hundred millions), the number of cubic miles in the globe of the earth, gives as the result SIXTY-ONE GLOBES OF SUGAR OF THE DIMENSIONS OF THE EARTH AS CONTAINED IN A QUINTILLION OF GRAINS OF SUGAR. The quantity of sugar then required for the reduction of one single grain of gold, or oyster-shell, or sulphur, or any other homœopathic drug, to the fifteenth trituration

or potency, is a mass equal to sixty-two times the size of the Earth. And further, a portion out of this enormous mass equal to a small pill or globule, is according to the tenets of homœopathy, a proper dose of the drug employed.

But Hahnemann came latterly to use as his constant and standard potency for gold, and all other drugs, a higher potency, viz., the thirtieth. In his last work, "he of course (observes Dr. Dudgeon) orders the decillionth or thirtieth dilution to be given in every case." To reduce, however, a grain of gold or any other drug or supposed drug to this decillionth or thirtieth dilution, would require the single grain of the medicine to be commixed through a mass of sugar immensely greater than for the quintillionth or fifteenth dilution. The mass can easily be ascertained by a simple rule of proportion, for if a quintillion grains or

1,000,000,000,000,000,000,000,000,000,000

are equal to 61 masses of sugar of the size of the Earth, then a decillion of grains or

1,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000

will be equal to

61,000,000,000,000,000,000,000,000,000,000

globes of sugar each of the dimensions of our planet. In other words, the proportion of any drug in the thirtieth dilution or decillionth globules of the homœopaths is to the sugar contained in the globules as one grain is to SIXTY-ONE QUINTILLIONS OF SPHERES OF SUGAR, EACH OF THESE 61,000,000,000,000 000,000,000,000,000,000 SPHERES OF SUGAR BEING OF THE DIMENSIONS OF THE EARTH.

The preceding calculations are founded on the idea that *sugar* is the medium used for attenuation in making the different potencies, one grain of the drug with 99 grains of sugar forming the first attenuation; one grain of the drug with 9999 forming the second attenuation; and so on. But generally *alcohol*, or alcohol and water, are employed to form the attenuations or dilutions. With fluid substances it is employed as the medium of attenuation or dilution from the first; and with solid substances after the third attenuation. (See the details already given in p. 40, &c.) The GLOBULES (when sugar-globules and not tinctures are used) are medicated by being merely touched by the moistened stopper of the phial which contains the proper alcoholic potency in its proper attenuation, as the 10th, 20th, or 30th. (See p. 41). The following Table is constructed on the form of the preceding common table of homœopathic attenuations, and is drawn up for the purpose of showing the quantity of alcohol or fluid required to dilute or reduce *one single grain* or *drop* of any medicine down to the principal attenuations or potencies, as the 1st, 3rd, 15th, &c. The computations are made on the idea that (as is usually calculated by writers on physics) the first 60 drops of fluid are equal at

least to a drachm; 480 drops are equal to an ounce; 160 ounces equal to a gallon; one gallon equal to 277 cubic inches; and 254,000,000,000,000 cubic inches equal to a cubic mile. The diameter of the orbit of Neptune (see 24th and 30th attenuations) is reckoned at 5,700,000,000 miles; and the distance of the nearest fixed star is 20,000,000,000,000 miles.

Table showing the quantity of alcohol or fluid required to dissolve one single grain or drop of a homœopathic drug (as sulphur, aconite, etc.) down into the following homœopathic attenuations or dilutions.

No. of Attenuation, Dilution, or Potency.	Relative Quantity of the Drug, and of the quantity of Alcohol in which it is dissolved in each Attenuation.
1st Attenuation.	—One grain, or drop, in one and a-half teaspoonfuls of alcohol.
2d Attenuation.	—One grain, in twenty-one fluid ounces of alcohol.
3d Attenuation.	—One grain, in two thousand and eighty ounces; or in one hundred and four pints of alcohol.
6th Attenuation.	—One grain, in thirteen million gallons; or in two hundred and six thousand hogsheads; or in fifty-one thousand tuns of alcohol.
9th Attenuation.	—One grain, in a lake of alcohol with a volume of about fourteen cubic miles; or in a lake of fifty fathoms in depth, and presenting two hundred and fifty miles of square surface.
12th Attenuation.	—One grain, in a sea containing about fourteen million cubic miles of alcohol; or in a quantity of fluid equal to a sea six times the size of the Mediterranean Sea.
15th Attenuation.	—One grain, in an ocean of fourteen billion cubic miles of alcohol; or in an ocean about forty-six thousand times greater than the whole waters contained in all the oceans of the Earth.
24th Attenuation.	—One grain, in an ocean of fourteen quintillion cubic miles of alcohol; or in a quantity sufficient to make one hundred and forty masses, each filling a sphere extending from limit to limit of the orbit of the planet Neptune.
30th Attenuation.	—One grain, in an ocean of fourteen septillion cubic miles of alcohol; or in a quantity sufficient to make one hundred and forty billion spherical masses extending from limit to limit of Neptune's orbit; or in a quantity equal to many hundred spheres each with a semi-diameter or radius extending from the Earth to the nearest fixed Star.

This thirtieth, or last, of these attenuations or dilutions is, according to Hahnemann, the most appropriate dose of every drug in every disease. For we have already found him strongly and solemnly declaring (see p. 50), "that it holds good and will continue to hold good as a homœopathic therapeutic maxim, not to be refuted by any experience in the world, that THE BEST DOSE of the properly-selected remedy is ALWAYS the very smallest one in one of the high dynamizations, X (or the 30th dilution), as well for chronic as for acute diseases." Now, this 30th dilution, which Hahnemann thus asserts as indubitably "*the best dose*" of all drugs for chronic or acute diseases, consists of a decillionth of a grain of the drug used; or, in other words, it consists of a MINUTE GLOBULE OF SUGAR, MOISTENED BY BEING SIMPLY DIPT IN A DROP OUT OF AN OCEAN OF FLUID ONE HUNDRED AND FORTY BILLIONS (OR 140,000,000,000,000) TIMES AS LARGE AS OUR WHOLE PLANETARY SYSTEM, AND WHICH ENORMOUS OCEAN HAS BEEN MEDICATED FOR THE PURPOSES OF HOMŒOPATHY, BY HAVING DISSOLVED AND MIXED THROUGH IT *One Single Grain* OF THE APPROPRIATE DRUG.

Surely common sense and common sanity both dictate to the human mind that it is utterly impossible that any such dose, from any such an inconceivable ocean, medicated by *a single grain* of any drug dissolved and mixed in it, can have any possible medicinal effect upon the human body, either in a state of health or in a state of disease; and,—looking at these and the numerous and diversified facts, CONFIRMATORY IN ALL RESPECTS OF THE SAME VIEW, which have been already stated in the preceding pages,—we cannot but conclude with a writer whom the homœopathists themselves regard as the mildest and fairest among their opponents, namely, Dr. Forbes, that in rejecting homœopathy, "we are discarding what is AT ONCE FALSE AND BAD—USELESS TO THE SUFFERER—AND DEGRADING TO THE PHYSICIAN."

[Hahnemann, however, improved his delusions wonderfully towards the end of his life, for he discovered that it was not necessary to swallow any of these globules or dilutions—the simple *smell* of them was sufficient.]

Hahnemann appears to have employed the exhibition of his infinitesimal drugs by smelling in two different ways, viz.;—*First*, By sometimes making the patient smell a *dried* decillionth globule;—or, *Secondly*, By dissolving a globule or two in water and spirits, and making the patient hold his nose over the surface of this solution of it.

In relation to the smelling of dried globules Hahnemann observes, "A globule, of which ten, twenty, or a hundred weigh a grain, impregnated with the 30th potentized dilution, and then *dried*, retains for this purpose (of olfaction) all its power undiminished for at least 18 or 20 years (my experience extends this length of time),

even though the phial be opened a thousand times during that period, if it be but protected from heat and the sun's light. But (he continues), should both nostrils be stopped up by coryza or polypus, the patient should inhale by the mouth, holding the orifice of the phial betwixt his lips. In little children, it may be applied close to their nostrils while they are asleep, with the *certainty* of producing an effect. The medicinal aura thus inhaled, comes in contact with the nerves seated in the walls of the spacious cavities it traverses, without obstruction, and thus produces a salutary influence on the vital force in the mildest, yet most powerful manner. And this, he adds, is *much preferable* to any other mode of administering the medicament in substance by the mouth."—*(Organon*, p. 332.*)*

In a note of Hahnemann's, translated by Dr. Dudgeon in his "Lesser Writings," the founder of homœopathy states—"A globule of this kind—for example, of staphisagræ, of the 30th dilution—which, in the course of twenty years, had been smelt several hundreds of times after opening the bottle in which it was, for a certain symptom that always recurred of the same character, possesses at this hour equal power as at first, which could not be the case did it not continue exhaling its medicinal power in an inexhaustible manner." Hahnemann further states—"It is especially in the form of vapour, by smelling and inhaling the medicinal aura, that is always emanating from a globule, impregnated with a medicinal fluid in a high development of power, and placed, *dry*, in a small phial, that the homœopathic remedies act most surely and most powerfully. The homœopathic physician allows the patient to hold the open mouth of the phial first in one nostril, and in the act of inspiration, inhale the air out of it, and then, if it is wished to give a stronger dose, smell in the same manner with the other nostril more or less strongly, according to the strength it is intended the dose should be."—*(Organon*, p. 331.*)*

[Such, then, is the gullibility of mankind, that people will sometimes trust their lives to this most worthless practice rather than to experienced and respectable medical men. The public cannot understand that when disease attacks the body the constitution itself makes strong and generally successful efforts to throw off the disease, provided the patient does nothing to check its efforts—for example, if a man catches a severe cold, and simply goes to bed and lives on low diet he soon recovers. The same effort to recover is made by the body in most diseases, and it is this constitutional effort to recover from disease which is managed by the physician to accomplish his end. But how wrong is it in the homœopathist to attribute to his globules or dilutions that which is only due to the conservative powers which the Almighty has implanted in the bodies of his creatures. There is no doubt that faith in a supposed remedy will often exert a powerful influence on some minds.]

Dr. Routh informs us that he himself tried experimentally the

effects of medical faith in some fifty or sixty cases, giving the patients nought but coloured water. "My plan (says he) was to employ three kinds of coloured water—red, yellow, and blue; to work upon the imagination of my patients, describing this water to be a deadly poison, and having it labelled accordingly, giving express caution to keep the medicine from the children. I invented a series of symptoms as likely to follow—from 20 to 30 drops a dose. It is but right to state, that in many cases the result was null, no effect appearing to have been produced. In some patients, however, chiefly neuralgic cases and weak-minded individuals, there was. In one case this coloured water produced such alarming symptoms that I was sent for in a great hurry to see my patient, a strong well-built man about twenty-five years old, labouring under some dyspeptic affection. I was informed that after every dose of the medicine taken (which consisted of 30 drops of water coloured with the compound lavender tincture), syncope, with convulsive movement, followed. A diminution to 20 drops re-assured my patient, and the fits did not occur again. My colleague, Dr. Taylor, found coloured water produce such distressing symptoms in a female, that he was obliged to omit it. If such effects were produced among *out-patients*, by whom all dietetic regimen was neglected, where rest and quiet were not enforced, what good effects might not have followed the employment of coloured water with these adjuvants?"

In the history of the human mind, few things are more interesting or more instructive than from time to time to turn back and consider the so-called sciences and strange delusions in which our predecessors of former ages placed implicit belief. To us at the present day it seems almost incredible that men —and these often the greatest and wisest men of their age —should have solemnly and very generally believed, for example, in the doctrines of Augury, of Astrology, of Alchemy, of Sorcery, &c., &c.

Nor, in pursuit of the same line of thought, is it less striking—though it is confessedly far more humbling—to look around at the present hour, and consider for a moment the analogous living delusions that for a time are enjoying temporary repute and fashion among us, but which, doubtlessly, will ultimately share the fate of the innumerable similar spurious "sciences" and "systems" which have preceded them. In this respect, the experience of the present time is only like the experience of all past time, proving, as it does, in too many and in too marked instances, the innate truth of Southey's observation, that, naturally, "man is a dupeable animal, and quacks in medicine, quacks in religion, and quacks in politics, know this—and live upon the knowledge of it." It will certainly be difficult for our descendants to point to a more striking illustration of this remark in the nineteenth century than is to be found in the present belief, or at least profession of belief, by some minds in that which a modern critic has designated, "a system of medical quackery, more

adapted to the era of the declining Greek and Roman civilisation, than the culmination of the European," namely, homœopathy; for, in various of its tenets and doctrines, homœopathy stands perhaps really unequalled in extravagance with any system of delusion that has, in any former times of ignorance and darkness, formed an object of human credulity and belief.

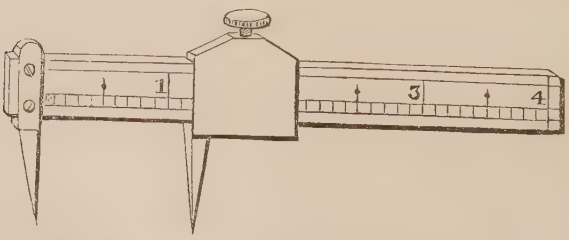
[The foregoing pages refer chiefly to the doses of medicine given by homœopathists, and, we think, show the utter absurdity and uselessness of their giving any medicine at all. There would be more sense in throwing a grain of medicine into the receding tide, and, after waiting an hour till it had become well mixed with the ocean, taking a single drop or two and giving it as a medicine in disease, or even allowing the patient to *smell* at the drop. This has become so absurd of late that the homœopaths themselves have become ashamed of it, and attempt to persuade the public that their system does not consist in the doses of medicine, but in the great principle that "like cures like." It would be perfectly easy in a society of medical men to demolish the arguments used to support this principle, however plausible they may be made to appear to the public: but our space will not allow us to argue this question in this place. Any one who may be really interested in the subject would do well to buy Dr. Simpson's volume, where many of the questions are argued very candidly, and the principles shown to be untenable. We will now only add our opinion, after reading a good deal on both sides of the question, that it is perfectly dishonest and dishonourable in any set of men pretending to place confidence in medicines which can contain nothing: and in abusing and decrying other respectable practitioners who adopt other views and use more powerful medicines. If a man conscientiously believes that the moon is a Cheshire cheese, we can only pity him; but the moment he abuses us for not agreeing with him, and at the same moment knows that his own medicines, so called, contain not one particle of medicine, if he be faithful to the system of Hahnemann, we cannot but look upon his practice as empirical and deceitful.]—*Prof. Simpson's "Homœopathy; its Tenets and Tendencies, Theoretical, Theological, and Therapeutical." Edinburgh: Sutherland & Knox.*

133.—DR. SIEVEKING'S ÆSTHESIOMETER.

This little instrument has been contrived and employed by Dr. Sieveking for the purpose of aiding in the diagnosis of certain forms of nervous diseases. Its employment is based upon the principle, that the capability of distinguishing the distance between two points at different parts of the body varies with the tactile sensibility of the respective regions. This power, in health, follows the general law of symmetry governing the body; hence, where in morbid conditions the tactile sensibility of one side is impaired, we have a means of deter-

mining the relative extent of the impairment by ascertaining at what distance the individual can feel two distinct impressions from two sharp points, slightly pressed upon the skin. The absolute impairment of tactile sensibility may be ascertained by comparing a given result with the tables of Professor Weber, which are contained in most handbooks of Physiology. Thus, if a person in health is able to recognise as two distinct impressions at the tips of his fingers, points one-tenth of an inch apart, it follows that if we find him unable on one or both hands to distinguish more than four-tenths, there must be a serious impediment to the reception or conduction of tactile impressions. The nature of the impediment must of course be determined by other evidence. It is manifest that, by applying an instrument to measure the tactile sensibility of different parts involved in a paralytic affection, we secure a more trustworthy standard to judge of its extent and character than if we trust to the patient's description of his sensations, or the ruder modes of pinching and pricking ordinarily employed.

There are three main classes of circumstances in which the Æsthesiometer, of which the annexed woodcut gives a reduced illustration, has been found useful.



1. In actual paralysis, to determine the amount and extent of sensational impairment.

2. As a means of diagnosis between actual paralysis of sensation and mere subjective anæsthesia, in which the tactile powers are unaltered.

3. As a means of determining the progress of a given case of paralysis for better or for worse.

It would be superfluous to give illustrations of each of the three classes of cases in which the æsthesiometer may afford us assistance. The first and third speak for themselves; to obviate the possibility of a misunderstanding of the second, an instance is subjoined which will serve as an illustration:

E. M'M., aged fifty-two, suffered for six months before the first consultation from numbness and formication of the left hand, with severe nocturnal pains along the tips of the fingers and at their meta-

carpal ends; the patient rarely had pain in the thumb and none in the palm of the hand. There was frequent vertigo. To determine the character of the numbness. the æsthesiometer was applied, and the patient was found to distinguish one-tenth of an inch equally well at the tips of the middle and third fingers of both hands; the instrument aided in the determination of the diagnosis by showing that the numbness was purely subjective, and not the result of a true paralytic affection.

The instrument is one of very simple construction, being essentially what is known to mechanics as a beam compass. It consists of a rod of bell-metal, four inches in height. graduated into inches and tenths of an inch. At one end is a fixed steel point; another steel point is made to slide upon the beam, and can be fixed at any distance from the first, by a screw which works at the top of the slide. The experimenter notes down the smallest interval at which the person experimented upon is able to recognise two impressions when the points are gently and simultaneously pressed upon any given part. Certain precautions are necessary here as in all other experiments, in order to insure trustworthy results.

It is important that the patient should not know what is expected of him; therefore it is well not to inform him of the object with which the instrument is applied; at whatever part it is used, it is easy to prevent the points from being seen, so that the eye may not aid in the determination of the tactile impression. It is equally necessary to make the two points impinge upon the surface at the same time, in order to prevent the production of two successive impressions, which would necessarily alter the value of the result.—*Brit. and For. Med.-Chir. Review, Jan.*, 1858, *p.* 280.

134.—PATHOLOGICAL EFFECTS OF NICOTINA.

By Dr. Alfred S. Taylor, F.R.S.

The action of this poison upon animals has lately been investigated by M. Claude Bernard. His experiments show that mammalia, birds, and reptiles, are destroyed by nicotina under similar symptoms; and that whether applied to the alimentary canal, to a wound in the skin, or to the mucous membrane of the conjunctiva, its rapidly fatal effects are equally manifested. The arterial capillary system appears to be specially affected by the poison, through the medium of the sympathetic nerve. The circulation is here arrested, while the heart continues to pulsate. The veins are full, but they no longer convey the blood onwards. Nicotina appears to affect the nervous system of organic life, just as strychnia affects the nervous system of animal life, and convulsions in either case are among the most prominent symptoms. According to this view the influence of the sympathetic nerve is specially manifested on the vascular capillary system.

Nicotina, like prussic acid, is a compound of carbon, nitrogen, and hydrogen. It contains no oxygen. Its formula is C_{10} H_7 N. When exposed to air and light it undergoes a chemical change, and acquires a brown colour; its energy as a poison is thereby reduced. Bernard states that he found the *modus operandi* of the partially decomposed poison to be different from that of pure nicotina. The functions of the heart and lungs were directly affected by it; while the pure poison chiefly spent its physiological action on the capillary circulation. He also found that the perfectly pure nicotina produced tetanic rigidity of the limbs. These results may explain the different views which have been entertained of the mode in which nicotina operates. One set of experimentalists have arrived at the conclusion that it acted exclusively on the muscular system, while another set have contended that the circulation alone was directly affected. The degree of purity of the nicotina employed may, in some measure, account for these differences.

Convulsions are not a necessary attendant on this form of poisoning. There were none in the case of M. W. They were observed in the experiment on a rabbit, but they were of a clonic, in place of a tetanic character. The temporary production of opisthotonos, however, proves that the spinal marrow was affected by the poison. The effects produced on the rabbit show the fallacy of relying upon the symptoms caused in animals as evidence of their character and course in the human subject.—*Guy's Hospital Reports, Vol. IV.*, 1858, *p.* 357.

135.—SUCCESSFUL TREATMENT BY NICOTINE, OF ATTEMPTED SUICIDE WITH STRYCHNIA.

By Dr. Thomas O'Reilly, St. Louis, Missouri, U. S.

[The patient had taken six grains of strychnia in some beer with the intention of destroying himself, but soon afterwards, as is generally the case, repenting of his rash act, an emetic was swallowed which acted freely. Notwithstanding, violent symptoms set in, and in this state he was first seen by the author in company with Dr. Byrne of the same city.]

On entering his room we found him stretched on his back, his countenance expressive of the most painful suffering and distress, his frame shaken by frequent convulsive spasms, his limbs rigidly extended, and his head slightly bent backwards. His face was of a livid red, and covered with a profuse sweat; his eyes were sunken, and moved with a rapid motion; his mouth was covered with saliva, which he ejected by spasmodic jerks, strongly reminding me of a case of hydrophobia which I had seen some time before. His respiration was quick and difficult, and attended with great pain in the precordial region; skin warm, and covered with a profuse clammy sweat, and he had copious watery discharges from his bowels. His intellect clear

and collected, and his feelings were so morbidly acute that the slightest touch appeared to aggravate his sufferings, and to bring on a spasm. On this account we could not correctly ascertain the state of his pulse.

Ignorant of any antidote likely to relieve him, and pressed by the urgency of the case, Dr. Byrne, acting on the suggestion of Dr. Haughton's paper (read before a meeting of the Royal Irish Academy, Nov. 29, 1856), took a cigar from a gentleman present, and infused it in half a pint of water.

One hour and fifteen minutes after he had taken the poison we gave him the first dose of the tobacco infusion, which he swallowed with difficulty. We continued it in table-spoonful doses at intervals of five minutes, until he had taken half the quantity infused, before we had noticed a favourable change. Then the muscles became relaxed, the spasms less severe, and the intervals between them longer; and so conscious was the patient of relief, that he constantly called for the tobacco-juice when he felt the paroxysm approaching. This encouraged us to persevere with the infusion, prolonging the intervals between each dose, as the frequency of the spasms abated; until finally, after twelve hours, they disappeared, leaving him in a state of fearful nervous prostration, from which he recovered in a few days, under a careful tonic treatment.

In the quantity of infusion administered we used one ounce and two drachms of dry tobacco leaves, including the cigar—a quantity which no healthy condition of system could stand; but the urgency of this case demanded it, and the result justified it, and at the same time afforded us another illustration of the counteracting influence of poisons, and tended in some way to establish the correctness of the conclusions at which the Rev. Mr. Haughton had arrived by his experiments.

From a single instance like this, I should be far from recommending nicotine as an antidote; but I trust that the publication of the case may attract the attention of others, who will test the subject with due care, and give the result of their experience to the world.—*Med. Times and Gazette June* 12, 1858, *p.* 600.

136.—NOTES OF A CASE OF POISONING BY STRYCHNIA.

By Dr. George H. Porter, Surgeon to the Meath Hospital.

[The number of medical men who have seen and examined the bodies of persons killed by strychnia is very small indeed, as will be seen by perusing the 'Table of Cases of Poisoning by Strychnine,' in Dr. Taylor's work, published in 1856. Dr. Porter has had the opportunity of examining the bodies of two gentlemen who selected strychnia as the means of committing suicide. The following case is related:]

Mr. G., aged 20, fair complexion and of middle stature, with well developed muscular system, was found dead in his bed at one of the

hotels in this city. He had been remaining at the establishment for some days, and appeared to be in the enjoyment of good health and spirits. On the 12th of January, 1857, he left the hotel in the morning to go hunt, having previously ordered dinner to be ready for him at six o'clock. He did not however return until eight o'clock that evening, when he partook of the meal, apparently with an appetite. He stayed in the coffee-room for some time, and then went out of the house, and did not return until about half an hour after midnight, when he retired to his bedroom.

Whilst out, he called at a medical-hall about eleven o'clock, and sent up word to the proprietor, who was in bed, that he was going to the country very early the following morning, and wanted some strychnine to poison a dog, at the same time apologizing for applying at such a late hour. The assistant brought the message up to his master, who at once refused to let him have so large a quantity as that asked for, of so deadly a poison, and desired the young man not to give it to Mr. G. He however prevailed on him, contrary to the directions of the proprietor, to give twenty grains. With this fatal package he returned to the hotel, and was discovered on the morning of the 13th of January, by one of the waiters, a lifeless corpse.

At one o'clock, p.m., that day, I was called upon to examine his body. It lay in full hunting attire in the bed, on his right side, the only part of his dress removed being his shirt-collar and neck-tie; a photograph miniature of a lady was under his right hand. His face was pale, and features calm like sleep, the eyes being closed, the pupils natural, the lips separated about one-fourth of an inch, no froth on them, and the teeth about one-eighth of an inch apart; tongue not protruded; his elbows bent at right angles, and fore-arms brought across the chest; extremely rigid, although still warm; his hands were half clenched, and his wrists slightly bent on the fore-arms; his lower extremities were extended and very rigid, the left lying a little across the right; the head and neck were forcibly bent backwards, and the entire body curved from the occiput to the heels, in a state of "opisthotonos" well marked. It was most difficult to take off his clothes, owing to the rigidity of his frame. Liver well developed all along the right side of his body, the remainder being quite pale. I placed it on a large table when undressed, and whilst I kept the shoulders in the same place, the body rested on the back of the head and the heels, the nates were raised from the surface of the table about half an inch, it being quite possible to look under them; the feet were not much extended, and were slightly turned inwards; there was no discharge of fæces, semen, or urine.

The autopsy disclosed the following appearances:—The muscles of the thorax and abdomen were of a bright red colour and well developed, there was a natural quantity of fat; the lungs were a little congested, otherwise healthy and voluminous; about half an ounce of serum lay in each side of the pleura; the heart rather larger than natural, its

right cavities distended with dark fluid blood, the left side contained but a small quantity, the valves were all normal; the stomach was very vascular, the mucous membrane in several places was mottled with dark brown patches—it contained about six ounces of food, and in some of the rugæ the strychnine was visible; about six grains of the poison had been swallowed, and an analysis of the contents of the stomach (which was kindly performed for me by Professor Geoghegan), gave all the usual proofs of the presence of the alkaloid. The liver and gall-bladder were healthy, as were also the kidneys, spleen, and intestines, the bladder was nearly full of urine; the brain was apparently healthy, but slightly congested. It is much to be regretted that the history of this case immediately prior to death is unknown, as it would be interesting to know how soon after this large dose was taken the symptoms supervened and death followed.—*Dublin Hospital Gazette, Aug.* 1, 1858, *p.* 227.

137.—ON THE USE OF TOBACCO ENEMA.

By R. W. O'Donovan, Esq.

Tobacco, in some form of preparation, has at different times been used either as a narcotic, sedative, emetic, diuretic, or cathartic, and I think I may add in distinctive nomenclature, a direct antispasmodic.

The diseases in which it has been most frequently prescribed are constipation of the bowels and hernia. In the treatment of the former the leaves of the fresh plant have been directly applied to the anus by the native Indian doctors, others have injected the smoke, while an infusion has been taken by the mouth or administered as an enema.

Like digitalis, tobacco labours under the questionable character of either "killing or curing," a notoriety derived equally, perhaps, from the extravagant praise of its supporters, as well as the unmerited censure of its opponents.

My own experience, drawn from the following cases, leads me to think favourably of its use. I would, however, strongly urge the following conditions, viz., firstly, that the surgeon should in all cases administer the enema himself; secondly, that he should not leave his patient until all symptoms of tobacco sickness have ceased, and reaction set in; and thirdly, never to use the drug without having a stimulant ready at hand. I always give some whiskey and water, a stimulant I think generally liked best.

I prefer giving the enema in small bulk, from two to four ounces of water, though the formula of the London College is a pint; for two reasons, first, that by not over-distending the rectum, the enema will be more certainly retained; and, secondly, for obvious reasons its constitutional effects are not likely to be so violent or long continued.

Case 1.—October, 1841. I attended —— Kelegher, a poor old man, about five miles distant from my residence, many years subject

to hernia, for which he wore a truss. Latterly, however, from the weakness of the spring and insufficiency of the pad, it became useless, and he went about without giving it any support. The day previous to my visit having been labouring hard, the bowel descended to an extent more than usual. He suffered a great deal of pain during the night, both in the hernial tumour and in the abdomen. Two o'clock p.m., when I saw him, his agony was very great, the hernia about ten or twelve inches in length. He had vomited before my visit; pulse small and quick. I endeavoured to return the hernia by the taxis, having first given him a hot hip-bath; but, failing, I determined on trying a tobacco enema before I would send him to the Infirmary, for even with assistance it would have been impossible to have operated in his wretched, dark cabin.

I prepared the enema, infusing one drachm of tobacco in about two wine-glassfuls of boiling water for twenty minutes, and lodged it merely in the rectum. I well recollect the anxiety, almost agony of mind, I suffered, watching the results. In about ten minutes I was startled by hearing "glug—glug," as if fluid was escaping from a bottle. On examining the tumour I found it reduced to half its size, and rapidly disappearing without assistance. I used a little more pressure, when the entire contents were at once got up. The sickness and nausea ceased in a short time after he got some spirits and water.

Case 2.—January, 1842, I was called to see Mrs. M'Hugh, a very old woman, mother of a large family, subject to constipated bowels. She has been for three days without a motion, but is not suffering as much as might have been expected. Got calomel and jalap, with other purgatives, and repeated enemas, before I saw her. The abdomen is hard, a little swollen, with some slight tenderness. I infused about half a drachm of tobacco in a tea-cupful of hot water for twenty minutes, and injected it. In five minutes the pulse became accelerated and weakened, and in two minutes more she complained of nausea with pains through the abdomen, which were attended with the escape of flatulence, unaccompanied by any sound, and almost immediately after she had a copious motion of hard, dry fæces. She got some spirits and water, and rapidly got well, suffering some annoyance from the disagreeable smell of tobacco for a few days.

Case 3.—March 13, 1843, I visited Sergeant Keenan, an old, but large and able-bodied man, ill three days with constipated bowels. Abdomen swollen and tender on pressure; he got castor oil, calomel, and senna and salts, before I saw him: ordered ten grains of calomel, and a purgative enema in three hours after.

14th. Enema retained; no motion; abdomen more tender. Administered a tobacco enema, prepared with one drachm of ordinary tobacco infused for twenty minutes in a wine-glassful of boiling water. A cold perspiration broke out over his body; he began to retch and yawn; smell of tobacco strong on his breath. A stream of exceedingly foul air came away in a continuous volume, followed by large quanti-

tities of fæces. He continued sick during the day, and got punch occasionally, but was quite convalescent in two days.

Case 4.—October, 1845, I visited a poor woman suffering from constipation for three days. She took several doses of active medicine before I saw her, and also had purgative injections. I found her suffering a good deal; abdomen hard, not much swollen; pulse small and quick; her breathing hurried. I infused about half a drachm of ordinary tobacco in a glassful of water and injected it. In a very few minutes she got very sick, nausea, retching, cold clammy sweat over the face, which was extremely pale; pulse fluttering, odour of tobacco strong from her mouth. She commenced almost immediately to void fæces and urine, apparently without an effort. I gave her at once half a glass of whiskey, and repeated it in twenty minutes. She continued very weak for the remainder of the day, and was ordered an effervescing mixture, with spirits as a stimulant, but got quite well in a few days.

Case 5.—October 25, 1853, I attended —— M'Corry, aged 50, who has suffered from reducible oblique inguinal hernia of the right side for some years. He was always, however, able to return it, and unfortunately neglected to adopt the precaution of getting a proper truss; the one he used being a "cast-off" one, and much worn, it did not cover the inguinal ring entirely, and latterly he seldom put it on. This morning, when lifting a "creel" of turf, he felt the intestine come down suddenly, and though he experienced considerable pain at the moment, he did not proceed to return it, but continued about his work for two hours, by which time, from the increased descent of the bowel, the pain became very severe. He then endeavoured in his usual way to reduce it, but without success, sickness of stomach and faintness supervening. I was sent for, and saw him four hours after the accident, and found him lying on the floor writhing in agony, the hernia enormously enlarged, measuring about fourteen inches from the ring to its base, presenting the appearance of hernia with hydrocele, having about midway a well-marked line of division, as if intestine formed the superior portion of the swelling, and fluid the inferior.

Having placed his body and limbs in a proper position, I endeavoured by the taxis to return the hernial contents, but ineffectually. During my efforts he suffered great pain. Having determined to administer a tobacco enema, I infused one drachm in four ounces of boiling water for twenty minutes, and, having injected it, I recommenced the taxis. In about six minutes the constitutional effects of the tobacco became evident; the skin lost its temperature, a cold sweat broke out over the body, nausea with severe retching came on. He now bore the handling of the scrotum without complaint. The sac gradually became emptied; at first the air passed up in bubbles, afterwards more continuously, and then with little difficulty the entire contents were reduced. He got some spirits and water every twenty minutes, and rallied perfectly before I left him.

Case 6.—November 16, 1857, I attended in consultation with Dr. W. Finlay of Swanlinbar, —— Magovern, aged 76, but before this accident a very healthy man. Has had an oblique reducible hernia for several years, and used a truss, but for some few months he left it off, and merely wore a pad and handkerchief. I learned that on the previous day, when getting over a stile, he stumbled and got a severe shock, and that almost immediately the intestine protruded, but did not descend into the scrotum. Dr. Finlay saw him in the evening and ordered a hot bath, gave him an enema, and endeavoured, but without success, to reduce the hernia. On examining him I found the hernia about the size of a small egg, firm and dense to the touch, and not particularly painful. The taxis was again tried for a considerable time, but without a satisfactory result.

As he positively refused to allow an operation, convinced that, as he was never sick during his long life, his death was at hand, a tobacco enema was administered, but without a successful issue. The constitutional effects of the drug were not well marked. He became sick, but the prostration attending its administration with my other patients was absent. We waited for an hour, trusting he would allow the operation, but eventually had to retire. He died the second day.

I have thus briefly given to the profession those *disjecta membra*, scattered through my case-books. A guide for myself, they were never intended for publication. I offer them *quantum valeat*, and as a mere *exposé* of private practice. I have intentionally avoided referring to authorities, or incumbering the article with quotations or extracts.

My remarks shall be brief. I will first observe that *all* my patients were smokers,—a circumstance which should be taken into consideration when reasoning on the propriety of administering a tobacco enema, for if in such a class of patients so great an amount of sickness follows its use, should we be justified in arguing that its effects in non-smokers would be seriously increased?

While unable to solve this difficulty, I must say, nevertheless, that from the rapidity with which these bad symptoms yield to treatment, I would not myself hesitate to have recourse to it in cases of obstinate constipation, when other active remedies had failed in affording relief.

And in hernia of long standing, particularly where the intestine is distended with air which appears to increase the resistance to reduction, an effect it certainly produced in my first and second case, I would unquestionably administer it before advising an operation, particularly in the country, where circumstances beyond the control of the surgeon often interpose to render the chance of success very problematical.

M'Corry's case was to me one of exceeding great interest, and I beg to draw attention to one practical feature connected with it. Evidently

a case of entero-epiplocele, the outline of its contents was as well marked as if a cord was drawn tight across the tumour, but I must confess the diagnosis of its nature was a matter of considerable difficulty. The lower portion of the hernia presented all the characteristics of hydrocele.—nearly transparent, with a most deceptive feel of fluctuation, pyriform. One only fact prevented my committing a fatal error by puncturing the supposed hydrocele, viz., that while in bed he was able to feel the testicle of one side as distinctly as the opposite, and that no swelling existed until he assumed the erect posture. I have operated for hydrocele where the transparency of the tumour was not near so great, and the sense of fluctuation not more evident.—*Dublin Quarterly Journal, Aug.*, 1858, *p.* 44.

138.—ON THE INFLUENCE OF LIQUOR POTASSÆ AND OTHER FIXED CAUSTIC ALKALIES UPON THE THERAPEUTIC PROPERTIES OF HENBANE, BELLADONNA, & STRAMONIUM.

By Dr. A. B. Garrod, F.R.S.

(Read before the Royal Medical and Chirurgical Society.)

The object of this communication was—

1st. To prove that the active principles of the plants under consideration are absolutely destroyed by the influence of the caustic alkalies.

2nd. To show the ratio which must exist between the different preparations of the plants and the alkalies for the neutralization to be perfect.

3rd. To ascertain the time demanded for the decomposition to be complete.

4th. To illustrate clinically the influence of the alkali in preventing the occurrence of symptoms, and removing such when large medicinal doses of these solanaceous drugs are administered.

Dr. Garrod, before proceeding to discuss these various heads, brought under notice a few points relating to the nature of liquor potassæ, and the properties of some of the officinal preparations of henbane, &c., showing that the former, although strongly caustic, still possessed but little neutralizing power, containing so small an amount of potash—not more than 6·7 per cent.; and that most of the preparations of henbane, belladonna, and stramonium, as the tinctures and extracts, were strongly acid in reaction, and hence, before the alkali could act upon the active principles contained in them, it must first neutralize this acidity, next separate the alkaloids from the acids with which they naturally are combined in the plants; that, therefore, much more was required (measured by the physiological or therapeutic strength of the drugs) to neutralize the galenical preparations than their alkaloids, or the active principles themselves. To prove that the active principles were absolutely destroyed by the alkali, he (Dr. Garrod)

performed several experiments in the following manner :—A solution of atropine was made by dissolving it in water with the aid of a little spirit, dividing the solution into two parts, adding to one some carbonate of potash, to the other a sufficiency of liquor potassæ, and permitting both to remain for some hours. Chloroform was afterwards well shaken, with both solutions, and allowed to subside, the supernatent fluid being poured off, and the chloroform washed with a little distilled water. Each portion was evaporated spontaneously in glass dishes. From the solution, to which carbonate of potash had been added, a gummy matter was obtained, (soon, however, becoming crystalline,) a solution of which dilated the pupil intensely ; and when acidulated with hydrochloric acid, and chloride of gold dropped in, gave rise to the beautiful plumose crystals of the double chloride of gold and atropine. From the second solution, that to which liquor potassæ had been added, a strong-smelling substance was left, on the evaporation of the chloroform, having no power of dilating the pupil, and giving rise to no crystallization with the gold salt.

These experiments demonstrated beyond doubt the absolute destructive agency of the caustic alkali upon the active principles. It was also shown that most other alkaloids, as morphia, quinine, cinchonine, &c., were not so destroyed, To show the ratio which must exist between the different preparations of the plants and the fixed alkali, in order that neutralization may be perfect, Dr. Garrod gave the results of more than sixty experiments and observations in a tabular form, from which it appeared that when atropine is acted upon by liquor potassæ, the destructive influence of the latter is so great that less than twenty minims are required to neutralize one grain of the former, and that probably pure potash will destroy its own weight of atropine. That when belladonna preparations are employed, the power of the potash becomes weakened, from the causes above alluded to—namely, the natural acidity of the drugs, and the necessity of first displacing the alkaloid from the acid with which it is combined : still, however, it was shown by the table that fifteen minims of liquor potassæ will destroy a fluid drachm of the tincture, and that twenty-five minims are sufficient to produce the same change in five grains of the extract ; at once demonstrating that quantities very greatly beyond the medicinal doses of these drugs—indeed, even poisonous amounts—are rendered quite inert by very moderate addition of the alkaline solution.

The same was found to hold good in the case of daturine and the preparations of stramonium. Ten minims of liquor potassæ will neutralise a drachm of tincture of henbane, and thirty minims destroy nine grains of extract of henbane, although when ten grains are employed, dilatation will often ensue from a small portion of the extract, less than one grain being left free, and it should be observed that a very minute proportion of these preparations are amply sufficient to induce the effect. Of course these extracts and tinctures are

liable to variation in strength, acidity, &c., circumstances which must necessarily produce an alteration in the requisite amounts of liquor potassæ required for complete neutralization. With even the best extract, however, procured from one of the first druggists in town, it was found that nine grains were destroyed by the above-named quantity of potash. Nine grains of good extract of henbane and three fluid drachms of good tincture of the same, may be considered as doses of the drugs, which few practitioners would prescribe; yet these are destroyed by thirty minims of liquor potassæ, proving beyond all doubt that in the proportions prescribed in actual practice a total neutralization of effect ensues. To ascertain the required time, Dr. Garrod made experiments with solutions of atropine, and commenced the observations shortly after the addition of the potash. In an hour and a half the effect on the pupil was much diminished, and in two hours and a half ceased altogether. The influence of the alkali in preventing the occurrence of symptoms and removing the same when large medicinal doses of these solanaceous drugs are administered, was clinically illustrated by the narration of several cases, in which, after very decided effects had been induced by henbane or belladonna preparations, the addition of a very small quantity of liquor potassæ to the draught (the patient continuing the other drugs) quickly caused the cessation of the symptoms; and again, other instances where the withdrawal of the liquor potassæ from a combination was followed by the occurrence of powerful symptoms. From these observations and experiments, Dr. Garrod concluded that the liquor potassæ possessed the peculiar power of destroying the active principles of henbane, belladonna, and stramonium, even when in very dilute solutions, and that the combinations frequently prescribed are utterly incompatible both in a chemical and therapeutical point of view.—*Lancet, July* 10, 1858, *p.* 46.

139.—ON THE THERAPEUTIC RELATIONS OF BELLADONNA AND OPIUM TO EACH OTHER.

By Benjamin Bell, Esq., F.R.C.S.E.

[But little attention has yet been given to a doctrine which seems to be undergoing gradual development, namely, that opium and belladonna are mutually remedial when either of the two has entered the system in a poisonous dose. This was first suggested by Dr. Corrigan, and subsequently Dr. Graves paid considerable attention to the subject, and came to the conclusion that in cases of cerebral excitement coming on in the course of fever, when there is a marked tendency to contraction of the pupil, that belladonna is a remedy of the greatest value, and that, under similar circumstances, opium, in every shape is injurious, even although combined with antimony.]

Dr. Graves, in commenting upon the subject, shows that hitherto, down to the period at which he wrote, physicians have been too much in the habit of regarding cerebral symptoms in fever as the result of congestion, of inflammation, or of a derangement of the balance betwixt the venous and arterial systems; whereas, many of these symptoms probably arise from causes altogether different, and which, judging by the effects produced, bear a close resemblance to poisons. For example, there is a common idea, that in cerebral affections, *dilatation* of the pupil only attends the state of coma or insensibility, and that, on the other hand, *contraction* of the pupil is always associated with a morbidly active state of the sensorium. This opinion is shown to be erroneous, as he thinks, both by attentive observation of the pupil in a succession of fever cases, and also by the phenomena met with by Dr. Peddie in some cases of poisoning with a certain species of mushroom, where the pupils were seen much contracted during the stage of perfect insensibility, and widely dilated during the fury of delirium.

[In the winter of 1853, Dr. Thomas Anderson, now in India, conceived the idea that belladonna might perhaps be found beneficial in relieving the coma with contracted pupils caused by opium—and a favourable opportunity having occurred, he submitted his hypothesis to the test of experiment.]

The patient had swallowed, in the course of thirty-six hours, two ounces of the solution of muriate of morphia for delirium tremens. He was in profound coma; his breathing stertorous, only four or five in the minute; and his pupils contracted to mere points. His pulse was excessively weak, and rather slow. It was quite impossible to rouse him. A drachm of tincture of belladonna, in water, was administered every half hour; and after the third dose, his pupils began to dilate. In four hours and a half from the beginning of this treatment, six drachms having been swallowed, a great improvement in his condition had taken place; the coma entirely gone; the respirations between twenty and twenty-five per minute; the pupils much dilated; the pulse nearly 120, and increased in strength; while the countenance, from being cold and pallid, had become flushed, and the whole body much warmer.

[In another case, a draught]

Containing one drachm of the ordinary solution of muriate of morphia, along with two drachms of tincture of henbane, failed entirely to induce sleep; whereas a much smaller dose, thirty-five drops, of the morphia alone, administered for several successive nights, invariably succeeded.

It is both interesting and important to advert, in connection with the foregoing facts and reasonings, to some experiments performed by Mr. T. Wharton Jones, in the course of his researches on the state

of the blood and blood-vessels in inflammation. He found that an artery in the web of a frog, under the microscope, was constricted in a varicose manner, almost to obliteration, on the application of a solution of sulphate of atropia, while, at the same time, the blood in the corresponding capillaries and venous radicles was in a state bordering on stagnation. The blood was no more than flowing in the constricted artery, when he applied to it some of Battley's liquor opii sedativus. The effect was full dilatation of the artery, and brisk flow of blood. On the other hand, he remarked, that arteries which had been caused to dilate by the application of Battley's liquor opii to the web, may be made to contract again by washing that substance away and applying a solution of atropia instead,

These experiments are the more valuable in relation to our present topic, from having been obviously performed in following out a quite different line of research.

During the last year, I have frequently employed Dr. Alexander Wood's ingenious plan of treating neuralgia by the local injection of morphia; and it has occurred to me that, supposing these views, of which I have been giving some account, to be substantially correct, we now possess a very precise and satisfactory mode of treating the more serious cases of poisoning with opium on the one hand, or with belladonna and its congeners on the other. In fact, the more unpromising and desperate the case, the more convenient and valuable would be the mode at which I point of applying the antidote. Let the sufferer be quite incapable of swallowing, we can inject the remedy in any quantity we choose, and in any region of the body that may seem most appropriate. The powers of life may be ebbing fast, and absorption from the enfeebled stomach not to be counted on; we possess, in subcutaneous injection, a more direct, rapid, and trustworthy mode of conveying our remedy in the desired quantity into the circulating blood.

With these impressions, I performed a series of experiments in the course of last autumn upon the rabbit and cat, in the hope of being warranted by the result, in having recourse to a similar procedure in the first case of poisoning in the human subject which might appear suitable. These experiments were modified in various ways, so as to ascertain the truth, and avoid, as far as possible, sources of fallacy. The result, on the whole, was certainly not opposed to the anticipations formed; but the poisonous effects produced on the animals under experiment were not sufficiently marked and impressive to justify a very confident opinion. There appear to be two chief sources of difficulty in drawing a conclusion from these or similar experiments. The first is, that the animals experimented on, particularly rabbits, seem to be but little susceptible of poisonous influence from any of the substances employed—morphia, atropia, and hyoscyamia; and the second source of difficulty is, that, for obvious reasons, we cannot appreciate the signs of cerebral disturbance so readily in animals as

in the human subject. I have notes of all the experiments, written at the time, but think it useless to trouble the society by reading the details.

It was my intention to repeat the same or similar experiments on the dog; but an opportunity of doing so had not occurred, when the following circumstances took place in the course of professional duty:

I was sent for, on the 11th of February, 1858, to see a young woman, an inmate of the Blind Asylum, who was suffering very severely from neuralgia of the frontal nerve. She was anxious to have the part injected at once with morphia, having, on three previous occasions, received from that proceeding immediate and complete relief. There was this peculiarity in her case, however, that although the morphia removed the local pain, it never procured sleep, and always caused more or less derangement of the stomach. I resolved, therefore, to employ instead of it a solution of atropia, remembering how very warmly the internal use of belladonna in neuralgic affections has been lauded by many trustworthy observers. I accordingly injected ten minims of a solution of atropia, containing four grains in an ounce of water, or, in other words, about one-twelfth of a grain of the medicine. She experienced immediate relief. Some mental confusion followed during several hours; but she felt altogether more comfortable than with the morphia, so that on a future occasion, mentioned in the sequel of this paper, she expressed a decided preference for the atropia.

On the 10th of March, I was requested to visit one of the men belonging to the same institution, who had been afflicted, for nearly two months, with sciatica of the right thigh and leg. His sufferings were very severe, almost without intermission, and aggravated by motion of the limb. I attempted to treat him, in the first instance, constitutionally, with croton oil pills, quinine, and iodide of potassium; but as no material improvement took place, recourse was had to the local treatment by injection. Twenty minims of a solution of morphia, double the ordinary strength, were introduced over the sciatic nerve, where it emerges from below the pyriformis muscle. He experienced immediate and complete relief, which continued for eight or ten hours; but at the end of that time, the pain came back again as intense as before. The injection was repeated on the two following days, with benefit to this extent, that when lying quietly in bed he now had intervals of comparative freedom from acute suffering. The internal remedies were continued.

The disease, however, was very obstinate, and I determined to try the injection of atropia, which had answered so well in the case of the young woman already mentioned. With her, one-twelfth of a grain had been employed without causing unpleasant symptoms, although the seat of pain was in the forehead; and I therefore inferred that in the present instance, where the symptoms were so much more obstinate, and at so great a distance from the brain, I

might safely use three times the quantity. I accordingly injected one-fourth of a grain of sulphate of atropia over the sciatic nerve. He experienced instantaneous relief, just as when the morphia had been used. This was at twelve o'clock. He said that he felt rather sick. I waited for some minutes, after which, as he made no further complaint, I left him in bed looking for a comfortable sleep, now that the pain was entirely removed. Upon reaching home, at half-past four, I found that a message had come sometime before, intimating that the blind man, on whom I had operated, was very ill, much excited and unable to speak. I went immediately, and found him very much as described; his countenance and head extremely flushed, with great distension of the veins; the breathing hurried; the pulse rapid and small; the skin hot and bathed in perspiration; he was exceedingly restless, his hands incessantly moving as if engaged in some of his ordinary handicraft duties at the asylum; his hearing was evidently acute, as he attempted to reply when spoken to; but there was a remarkable dryness of the mouth and throat, which prevented articulation, even if the mental disturbance had been less complete. From the previously disorganised condition of both corneæ, the condition of the pupils could not be examined. It is perhaps worthy of notice that the general surface of his body appeared to be very itchy, from his frequent endeavours to scratch it.

His condition was altogether alarming, and there were no indications of any tendeucy to improvement. Under these circumstances, being acquainted with no more promising plan of treatment, I had recourse, with some confidence, to the subcutaneous injection of morphia. I injected without delay, twenty-five minims of the double strength solution into the glutæal region of the opposite limb, which happened to lie next the edge of the bed. This was about five p.m. Almost immediately a decided change for the better was perceptible. He became considerably calmer, and swallowed a little water without much difficulty. I visited him again at half-past seven, and was glad to find that he had been sleeping quietly in one posture for an hour and a half. The remarkable flushing and congestion of the head and face had entirely disappeared. The pulse was fuller and less frequent; the skin soft and comfortable. He continued to sleep composedly until four next morning, when he awoke still rather confused; he again fell asleep, and awoke at six, apparently quite well and free from mental disturbance. When I called in the course of the forenoon, I found him entirely relieved from pain and in good spirits, but quite unconscious, or at least oblivious, of all that had happened during the period of so much anxiety to those around him. He had been out of bed walking up and down his room, quite delighted to find that he could now move about without any uneasiness in the affected limb, a feat which had not been possible for many weeks.

A few days after these occurrences, my former patient, in whose case I had used the atropia a month before, had a violent return of

the tic in her brow, and was anxious to have the same treatment employed. I questioned her particularly as to her previous experience of the two remedies, and she gave a decided preference to the atropia. I used only five minims of a strong solution (gr. viii. ad ℥i.), or one-twelfth of a grain,—the same quantity as on the previous occasion. She was suffering intense pain at the time, and as usual, the relief was almost immediate; but in a few minutes, she moaned a good deal, and on being asked the reason, now that the pain was gone, replied, that she felt afraid, and saw a number of strange-looking people at the foot of her bed. Her pulse soon became frequent and rather small, and she had a considerable amount of subsultus and jerking of the hands. The quantity of atropia that had been injected was so small, that I had no hesitation in leaving her for a time; but I directed one of the other inmates of the Asylum to encourage her by sitting at the bedside, in case she continued sleepless and uncomfortable. This was at mid-day. I saw her again at 2.30. She was much in the same condition—restless and moaning with a frequent pulse, and complaining, when questioned, of an unpleasant feeling of deadness or want of power in the lower extremities, and of dryness in the throat. With her own ready consent, I injected fifteen minims of the strong solution of morphia over the right shoulder-blade. She soon felt much more comfortable, and after the lapse of two hours, the pulse, from being small and rapid, had become full and soft, although still more frequent than natural. On the following day she was comparatively well, and quite free from pain. She mentioned very distinctly, that immediately after the morphia was injected over the shoulder-blade, she had experienced complete relief from an unpleasant sensation in her head, and also from the feeling of deadness in her lower extremities already referred to.

I am quite satisfied, from what I observed in these two cases, although my description may have failed to convey the same impression, that the injection of morphia had a powerful effect in modifying and controlling the poisonous influence of the atropia. I have had no opportunity, in the human subject, of putting the converse doctrine regarding morphia to the test of experiment; but the evidence of facts already brought together in support of it seems to be so weighty, that I should confidently have recourse to the injection of atropia in a suitable case of poisoning with opium or any of its preparations. What do I mean by a suitable case? One in which the means of treatment now in use having been employed, the symptoms of poisoning still continue obstinate and alarming. As a matter of course, the stomach ought to be emptied of any remaining poison as promptly as possible, by the ordinary methods, so as to prevent any more from passing into the circulation; for it is with that portion, and that only, which has already entered the blood, that the injected atropia is intended to grapple; and, of course also, the quantity of the remedy employed should be regulated by the supposed quantity of

the poison and the urgency of the symptoms. The mode of treatment by injection has this great recommendation, that it can be repeated, if necessary, at intervals, in an accurate and precise manner, according to the effect produced, without the uncertainty which, under the circumstances of the patient, must attend administration by the mouth. It is desirable however, to use no larger quantity of the antidote, itself an active poison, than seems necessary to neutralise or modify the more dangerous effects of the poison which the individual has swallowed. We must watch carefully for every symptom of improvement, and be satisfied if our remedy gives a decided turn to the case, by relieving the more alarming and urgent symptoms, without seeking to press the use of it unduly, as if we supposed that the vis medicatrix naturæ had resigned her office.—*Edinb. Med. Journal, July* 1858, *p.* 1.

140.—*Opium and Sulphate of Quinine—Antagonistic Action.*—M. Gubler, in a paper read before the Société Médicale des Hôpitaux, has attempted to establish a direct antagonistic action between the sulphate of quinine and opium. He states, that while opium causes cerebral congestion, quinine possesses a diametrically opposite influence. In support of his theory, the ingenious author relates a case in which 30 grains of quinine and 5 grains of extract of opium simultaneously administered failed to produce either the characteristic intoxication of quinine or the somnolency to be expected from opium. —*Med. Times and Gazette, July* 3, 1858, *p.* 16.

141.—ON LOCAL ANÆSTHESIA AND ELECTRICITY.

By Dr. Benjamin W. Richardson, Physician to the Royal Infirmary for Diseases of the Chest, and Lecturer on Physiology at the Grosvenor-place School of Medicine.

[The application of the electric current for preventing pain in dental operations is a subject now widely circulated. The present paper, prepared some time since by the author, contains the result of experimental enquiries then prosecuted by him with reference to the application of the electric current for the production of anæsthesia. Dr. Richardson says:]

My attention was first drawn to the subject in hand in the year 1853, in the following manner:—

I was then engaged in investigating by experiment the influence of electricity on the blood in the living animal body. In one of these experiments a small dog was subjected to an electrical shock, resulting from the discharge of a battery of seventy-two Leyden jars. Wire chains ready for connexion with the battery were placed one round the throat of the animal, meeting over the upper part of the head, the

other round the lower part of the body at the loins. The whole charge was at once passed through the body. The animal fell without a struggle, and lay before me to external appearance dead. There was no respiration for several seconds, but the heart continued beating. A little later, and there was a feeble respiratory gasp. I pricked the nose of the animal with the point of a scalpel, and blood issued, but no indication of sensibility on the part of the animal followed. A minute more. and I had laid bare about an inch of the right jugular vein. I tapped the vein, drew off a few drachms of blood for after observation, passed a ligature round the vessel above the opening, brought the edges of the flesh-wound neatly together and secured them by suture. By the time I had done, the signs of reanimation were well marked, but the operation had been performed without the slightest evidence of suffering. For a little time the respiration was short and irregular, but in a few minutes the animal rose slowly, looked about him, as if wondering where he had been, and recovered without a bad symptom.

This was probably the first instance in which any operation was performed without pain, by means of electricity. This result of the experiment was purely accidental. The experiment was originally intended for a different object altogether; but accustomed to operate on narcotised animals, the new fact of the perfect production of insensibility by electricity changed the intention of the experiment entirely in my mind. The idea of producing general anæsthesia for the purpose of an operation. by a repetition of this one electrical experiment, was of necessity out of the argument, for it were impossible so to adjust a shock as to produce a sufficient degree of general insensibility for an operation without the hazard of destroying life altogether. The fact of the production of insensibility was. however. striking; and this fact at once suggested to me that what could be done to the whole body might possibly be done to a part.

To carry out the inquiry which had thus been presented, I tried the effect of passing electrical shocks of varying intensities through the limbs of animals. The shocks were severely felt in these cases; but I could never detect that at any instant after the shock the sensibility of the parts through which it had passed was at all destroyed. There was often some temporary twitching of the muscles of the limb operated on, but the merest attempt to produce pain succeeded.

I next tried various experiments on myself. I charged twenty Leyden jars, and discharged them, either in combinations, or one after the other in rapid succession, through one of my fingers. The shocks were painful to bear, and when many were given, the last was felt as severely as the first; but afterwards, the finger was as sensitive to a prick from the point of a lancet as it had been previously.

I tried the local effect of the continuous current for long periods, but with as little success.

I passed the electro-magnetic current through one finger for long

periods, modifying the intensity of the shocks; sometimes submitting the part for periods of an hour or more to a gentle current; at other times increasing the force till the pain produced was scarcely endurable. On January 3, and on August 8, of the present year, I kept a finger for two hours thus exposed; but in these, as in all other cases, without the slightest effect in removing sensibility. While the finger was being subjected to the current, I tested its sensibility by pricking it with a lancet or needle. This test is, however, unnecessary, for so long as the part operated on is sensible of shock, it is sensible to a cut or a puncture. An animal deeply narcotised with chloroform is as little sensitive to electrical shocks as it is to the knife.

In its local application, indeed, it seems to me that the electric current restores rather than destroys sensibility. One experiment will explain this. Let two fingers be placed in a freezing mixture and held there until the external surface is so benumbed, that the prick of a needle is not felt. Let them then be removed, and let pass through one the current from the electro-magnetic battery. In the finger thus operated upon, it will be found not simply that the sensibility will come back more quickly, but so much the more quickly as to lead to the unpleasant and painful reaction called vulgarly "hot-ache." The current acts like warmth in this respect.

In one experiment the effects produced were very peculiar, and deserve special note. I placed the first and second fingers of the left hand in a mixture of ice and salt till they were entirely insensible to puncture. I then removed them from the mixture, and after well drying them I placed one wire from the electro-magnetic battery round the second finger, at a distance of three quarters of an inch from the tip, and the other wire round the finger at the base. A gentle current was passed. For a brief period I was not conscious of the shocks, but suddenly the portion of finger included between the wires, from being white, became red and injected, and therewith there was excited a degree of pain that was unendurable. By removing the wires and applying cold once more the acute pain passed off. But the most interesting point is, that while the first finger regained its normal sensibility in the course of an hour, and the second regained its normal sensibility in the parts which had been enclosed between the wires, the end of this second finger, from the point beyond which the upper wire had encircled it, remained completely insensible for four hours, and felt slightly numbed even thirty-six hours later.

From these experiments I have no alternative but to believe that the electric current cannot, according to our present knowledge of its application, be made practicable for the production of local anæsthesia.

The only way by which, as I would suggest, electric shocks can in any way be said to remove pain locally, is, that the pain which they excite creates a diversion, so that any new pain which may be inflicted on the part is not felt the less, but is lost in some degree in the pain

which was pre-existent. I give a simple illustration. The school-boy tells his new comrade that he can remove a hair from his head without the removal being felt. The skilful operator seizes a hair with his left thumb and finger, pulls it out quickly, and at the very moment strikes the head of his dupe a smart blow with his flat right hand. The operation is performed, and it may be without the pain which would have been elicited by a simple pull. The pain, however, is not removed, but diverted. When my finger was painfully affected by the electric current, the entrance of the lancet or needle point into the skin caused sometimes a more acute, sometimes a less defined, pain than is ordinary. Mr. Louis Parnell, who allowed me to perform some experiments on his finger, expressed that his sensations were the same.

We have seen, nevertheless, in the first experiment related, that a powerful electric shock, sent through the whole body, will produce insensibility; why, therefore, should it not have the same effect in its local application? A dose of aconite tincture will render a body generally insensible to pain; a drop of the same tincture, put on the lip, will produce numbness of the lip. Here is brought out at once a general and a local effect, each alike in kind, but different in degree. Why, then, should not the same obtain with the electric shock? To answer this, the consideration of the modes in which insensibility is ordinarily produced is necessary.

My late friend, Dr. John Snow, did much in clearing up the mystery which interposes here. He has described, and to my mind proved, that the sensibility of the body may be destroyed in two ways. First, it may be destroyed by the direct effect of some benumbing agent on the extremities of the nerves of the part. Secondly, by the effect of the agent on the centres of intelligence, *i.e.* by the destruction of consciousness. Thus, the effect of some narcotic vapours, taken into the system at large, may even be contrasted; amylene, for example, acts mainly on the extremities of the sensory nerves, interfering but feebly with the consciousness. Ether, on the other hand, suspends sensibility in proportion as it destroys consciousness.

Now, when a powerful electric shock is sent through an animal body it destroys sensibility, not because it is a local anæsthetic, but because it strikes out at a blow the consciousness. The animal for the time is dead to all impressions, pleasant or painful. An animal stunned by a blow is in the same condition; an animal in syncope is in the same condition. In this explanation I read off the reasons why electricity, as generally applied, *did*, and as locally applied, did *not*, produce insensibility.

In sending this paper to the press, it is no part of my object to interfere with the labours of Mr. Snape. The present unsatisfactory mode of preventing pain in surgical operations must unquestionably be superseded ultimately by some better process. It shall be read of some day as rude science, that leads the whole body into the realm of

dissolution, that one poor molar may be dragged out without a flinch. Dr. Arnott thinks it so now. A mode of producing local anæsthesia, I mean complete anæsthesia, lies open at this moment as the grandest practical discovery to be made in medicine; and he who makes it can be begrudged his well-earned fame by none but the selfish and the foolish. I write, therefore, not critically, but to record my own researches and their results.

[The following is extracted from the 'Medical Times and Gazette' of the same date, in which Dr. Richardson's communication appears:]

Mr. Snape, Dentist to the Chester Infirmary, informs the public and the profession, through the 'Times.' that he has lately "extracted 150 teeth from people of all ranks, of both sexes, and of every age, and the testimony of each has been most satisfactory," a current of electricity having been passed through the tooth to be extracted.

"Some persons said they experienced pain, but not so much as usual; others, that they felt no pain whatever. Some patients have said they were conscious of the pull, but the customary pang was absent. The exclamations of many after completion of the operation have been, 'Oh, how very delightful!' 'How very nice!' 'How very wonderful!' &c. One gentleman, who was rather sceptical, after having a tooth extracted, said, 'Well, I would not disbelieve a man now if he told me he had learnt to fly.' Feeling desirous of getting as satisfactory evidence as possible, I persuaded my youngest son, who is not fonder of having his teeth drawn than other boys of his age, to have a temporary molar tooth removed, in order that he might be able to tell me what he thought of it. As soon as the tooth was out he exclaimed, 'That's the thing! It will do, papa!'"

Mr. Bridgman, of Norwich, furnishes the following account of the *modus operandi*:—

"The apparatus for the purpose is extremely simple, and consists principally of the common electro-magnetic machine used in medical electricity, a single cell and pair of plates constituting a Smee's battery, and a small electro-magnetic coil with a bundle of wires for graduating the strength of the current. One end of the thin wire conveying the secondary current is attached to the handle of the forceps, and the other end of it to a metallic handle to be placed in the hand of the patient. The instrument touching the tooth completes the circuit, and the current passes instantaneously.

"The wire attached to the forceps should be made to pass through an interrupting footboard, so that the continuity of the wire may be made or broken in an instant by a movement of the right foot of the operator. The advantage of this arrangement is that it allows the instrument to be placed in the mouth without risk of producing a shock in coming in contact with the lips, cheeks, or the tongue, which would interfere with the quiet of the patient.

"A hole drilled in the end of the left handle of the forceps, and the end of the wire tapered to fit rather tightly, allows the substitution of one pair of forceps for another with scarcely a moment's delay."—*Med. Times and Gazette, Sept.* 11, 1858, *p.* 275.

142.—ON ANÆSTHESIA AND ELECTRICITY.

By Dr. Althaus and H. W. Lobb, Esq.

[Dr. Richardson denies that the electric current in its local application has any effect to remove sensibility; in fact, rather the other way. Dr. Richardson passed powerful shocks through his fingers, without diminishing their sensibility. Dr. Althaus, in reply to Dr. Richardson, points out that the current should be passed through the trunk of a nerve, say the median, or the sciatic, by placing one moistened conductor connected with the positive pole, to any point of the skin where the trunk of such nerve is superficial, and another moistened conductor connected with the negative pole to any of the terminal branches of such nerve. sensibility is notably diminished, though not entirely destroyed, and a feeling of numbness produced. Mr. H. W. Lobb remarks, that Dr. Richardson did not use the continuous current. He says]

During the month of June of the present year, I had under treatment three cases of infra-mammary pain at the Western General Dispensary. Dr. Coote was desirous of making use of the continuous current of electricity as a method of diagnosis, he having heard me affirm that neuralgiæ are of two distinct descriptions: the one requiring the direct, positive, or stimulating current to effect a cure: the other, the inverse or depressing, commonly, although erroneously, termed negative. To two of the women the positive current was applied with decided and immediate benefit; to the third, the inverse, which, in less than a minute, not only removed the pain, but consciousness also, in which state she remained for ten minutes. Upon return to life, she said that her side was quite numbed. This was an instance not only of local, but of general anæsthesia, produced by the aid of the continuous current of electricity in less than a minute. Dr. Coote, and a gentleman, whose name I do not know, were witnesses to this fact.

A young lady, paralysed in her right arm since her third year, was wearing a chain for the generation of the continuous current to excite the circulation, during the intermittances of the application of the interrupted current to stimulate the paralysed muscles. One day she complained that the arm was colder than before she wore the chain, and, in fact, it was more like a piece of marble, and perfectly without sensation. Upon examination, I found that she had, upon exciting the chain, returned it to the arm, so that an inverse current passed instead of a direct, thus producing anæsthesia. I was now convinced

that anæsthesia might be produced by the inverse continuous current of electricity, of sufficient tension to pass along the nerve we are desirous to deprive of sensation.

I have now used the inverse continuous current of electricity for more than twelve months for the cure of some forms of neuralgia, toothache, &c. I have never used it to prevent pain during the extraction of teeth; but from what I know of its success in toothache, the following plan will, I have no doubt, be found perfectly successful.

Procure a 60-link Pulvermacher chain battery, and to the positive pole attach, by the aid of a wire, the wire-brush conductor, and place this upon or within the tooth to be extracted; to the negative pole attach the conductor, containing a moistened sponge which is to be placed upon the course of the nerve, when practicable, otherwise beneath the ear of the side corresponding to the tooth to be removed. Now excite the chain link by link with acid, and in from one to five minutes, without the least sensation having been experienced (if the conductors have not been moved, and the operation been skilfully managed), the portion of nerve through which the inverse continuous current has passed, will be found totally insensible, and the tooth may be extracted without pain.

I should be glad if gentlemen of Dr. Richardson's known impartiality would give the above a fair trial, and in case of failure I should be most happy personally to explain the *modus operandi*, and the method of manipulation.—*Med. Times and Gazette, Sept.* 18, 1858 *p.* 305.

143.—*Electricity in Surgical Operations.*—It may be interesting to our readers to hear that some observations have been made during the last few days, by Mr. Marshall, at the University College Hospital, on the efficacy of the electric current in benumbing parts submitted to surgical operations by the knife,—the idea involved in these trials being, of course, derived from its alleged advantages in tooth-drawing. As many as nine operations requiring incisions of various kinds, including cases of abscess, carbuncle, and the removal of an adipose, tumour, have been performed between the 9th and 14th of September. Excepting where the current employed appeared to be too strong, the pain of the incisions appears on the whole to have been so modified as to be more bearable than is usually the case. In one instance, that of the adipose tumour, the cuts were very slightly painful. There was no instance, however, of complete anæsthesia; and it would be premature to flatter ourselves that, in regard to the effects of electricity in cutting operations, anything more than a modifying influence had yet been certainly obtained.—*Lancet, Sept.* 18, 1858, *p.* 297.

144.—GALVANISM FOR TOOTHACHE, AND AS AN ANÆSTHETIC IN DENTAL SURGERY.

By J. N. Hearder, Esq., Plymouth.

[Speaking of the employment of galvanism, the writer remarks:]

I have been in the habit of applying it in cases of toothache during the last thirty years, and have relieved hundreds of cases, most of them permanently, many of them for a considerable period of time, some only temporarily, and very few not at all. The cases which yield most easily to treatment are those in which the pain originates in the tooth itself. Those in which the pain results from neuralgic affections require more continuous treatment; but, as might be expected, in cases of abscess at the root of the tooth, the disease is occasionally increased, and the symptoms aggravated. My mode of treatment is generally to apply a metal disc, covered with moistened cloth, and connected with the positive pole, on the back of the neck, placing a similar disc connected with the negative pole either on the tooth itself or gum, or passing this second disc along the course of the nerve and its branches exteriorly on the face. The degree of power necessary is very feeble, $1\frac{1}{4}$ or $1\frac{1}{2}$ degree of my graduated coil being generally sufficient. So efficacious is this remedy, that some of my own children, who suffer occasionally from defective teeth, almost make it a rule, if awoke in the night by toothache, to get out immediately, and excite one of my galvanic apparatus, which is generally ready for use, and, after applying it for a few minutes, return to their room relieved from pain, and sure of a comfortable night's rest.

A word or two on the application of electricity in dental operations. Having lately been co-operating with my friends of the dental profession in applying electricity as an anæsthetic, I have been led to conclude, not only from their experiments, but from a careful consideration of the experiments of others, that the results are quite compatible with the conditions under which they are obtained. However various the opinions as to its efficacy, and however conflicting the evidence afforded on the subject, the failures appear to indicate little more than the absence of an efficient apparatus, or the want of experience in the application of it. Much more must be done in the way of investigation and careful manipulation before individuals, or even societies, will be in a fair position to depreciate the value of an agent so powerful, and, in the right hands, so efficient. Even the investigation of the causes of some of the failures show that the right effect would have been produced if the right means had been adopted. Much of the experience on this head will be necessarily empirical until the relation between cause and effect shall be so far determined as to establish a sufficiently accurate system of prognosis. One step towards the attainment of this will be the employment of a suitable apparatus, capable of easy application, and minute and delicate graduation. Such an apparatus I introduced to the scientific world, as applicable for

general electro-therapeutics, many years since, and was honoured by the silver medal of the Royal Cornwall Polytechnic Society for my improved system of graduation, which was effected by two indices, one producing a series of equal movements of power, and the second subdividing these movements for the sake of greater delicacy. Subsequently, at the suggestion of Dr. Barnes, whose valuable hints were of the greatest service to me, I reduced its bulk, and adopted it as a companion for the obstetric practitioner.

I have only now found it necessary to introduce a spring foot-board, for interrupting the shock, to render the apparatus in every respect, I believe, suitable for dental operations.—*Lancet, Nov.* 13, 1858, *p.* 503.

145.—*Chloroform as a Narcotic.*—Chloroform has lately been much employed to procure sleep in those cases where opium is contraindicated or fails to act. It is administered in doses of thirty or forty minims, suspended in a little acacia mixture, or some other mucilaginous fluid: and, given at night, generally succeeds in procuring for the patient two or three hours of tranquil sleep. In this way it has been used very successfully in cases of old bronchitis attended with profuse secretion; and in hemicrania, or other painful nervous affections, where opiates have lost all power of alleviating the patient's misery, the use of chloroform internally, in the doses above mentioned, has been attended with great and immediate relief, which allows the patient to obtain that repose of which he stands so much in need.—*British Med. Journal, April* 24, 1858, *p.* 328.

146.—CAUTIONS IN THE ADMINISTRATION OF CHLOROFORM.

By Henry Potter, Esq.

It appears to me that, if the operation is a very slight one, the minimum amount of anæsthesia necessary to produce the effect ought to be the great aim of the chloroformist. Dr. Snow used to consider that, with his apparatus, from three to four minutes was sufficient to bring the patient under the influence of chloroform, but I think six or seven is much nearer the mark. I attribute the comparative safety of the inhaler, over a sponge or handkerchief, to the much less rapid introduction of the poisonous vapour into the blood, in consequence of its large admixture with common air; whereas with the sponge or handkerchief the effect is much quicker, and the dilution of the vapour a matter of great uncertainty. Much more congestion is produced, from the circulation not having had time to accustom itself to a foreign vapour, and the danger to life is greatly increased. We must all consider the introduction of chloroform as one of the most important discoveries of our age, and a great blessing to suffering humanity,

by removing all the horrors of operative surgery; but at the same time there is some risk, and a vast uncertainty in the effects produced on different constitutions, of which there are no means of judging beforehand. It is only by constant practice and experience that we become familiar with the varied symptoms that occur, and know how far we may press chloroform with safety to our patient. I will illustrate this by a case I had at St. George's only a few weeks ago.

A pale cachectic woman, aged twenty-seven, was admitted under the care of Mr. Tatum, with malignant disease of the knee-joint. She had been confined only three months before, and was nursing her baby up to the day of admission. On her being placed upon the table, I proceeded to administer the chloroform. She had no fear, and seemed to take it very well for about three minutes, when I was alarmed by the total insensibility of the eye and by the breathing being slower than natural. I placed my ear to her chest, and found the heart fluttering, though the pulse at the wrist was to be distinctly felt. I was confident, from former experience, that it would not be prudent to continue the inhalation of the chloroform any longer, notwithstanding the state of the pulse and the general opinion of those round the table, who thought there was no danger. I requested Mr. Tatum to begin the operation. The patient seemed slightly sensible; the pulse became weaker and weaker, till it could be scarcely distinguished. I immediately had recourse to stimulants: cold water was dashed freely upon the chest, and as much wine as could be got down was given, but the power of swallowing was very imperfect. The faintness continued for some time after the operation, and it was half an hour before she could be removed with safety from the theatre. On her return to the ward she was sick, and brought up the wine that had been administered. She was totally unconscious of the operation, and had no bad symptoms afterwards. The stump healed kindly, and she left the hospital on the 23rd of June.

I believe that in this case, had I continued the exhibition of the chloroform, the result would have been very different. The woman, weakened by the disease as well as by suckling, had no doubt a weak, flabby heart, though auscultation gave no sign of a diseased state either of its valves or muscular structure. And it is especially in this class of cases that the chloroformist is called upon to exercise the utmost vigilance and care. I could relate several cases of a similar nature from my experience of nearly four thousand patients to whom I have administered chloroform; and the only case of death that has occurred in my practice was one that proved fatal in consequence of this morbid condition of the heart. I will just give the leading features of the case, which will be found reported more at length in the 'Lancet' of May 13th, 1854. The patient was a pale, cachectic woman, aged thirty-seven, with chronic mammary tumour. She had been an out-patient for many months before admission, and was in a very weakly, nervous state. She was kept in the hospital a fortnight,

to prepare her by rest and good diet for undergoing the operation. On coming into the theatre she was extremely nervous, and expressed great dread of the operation. I had only been about a minute and a half giving her chloroform, with the valve of the apparatus not more than one-third closed, so that the amount of the vapour inhaled must have been very small. I repeatedly asked her to breathe naturally, and not in the spasmodic, gasping way she was doing; but when I found there was no alteration I took off the mouth-piece. The lips were livid, and the mouth was open, and I found she had fainted. I immediately had recourse to restoratives—cold water dashed over the body, cold air, ammonia to the nostrils, artificial respiration, and galvanism.—which were continued for a considerable period, with no good effect. The woman died almost immediately. The post-mortem examination disclosed nothing more than a small and slightly fatty heart; a few feeble inhalations of the chloroform, added to great fear, had been sufficient to paralyze its action. Dr. Snow analyzed some of the blood and portions of the viscera, but could not find a trace of chloroform, so he did not admit it as a death from chloroform.

Another point of very considerable interest in the administration of chloroform is the state of the stomach at the time of inhalation. If chloroform is given on a full stomach, there will be much greater congestion of all the important organs, in addition to the sickness that follows, which is sometimes most troublesome. No food ought to be taken for three hours at least before an operation; but, on the other hand, the system must not be reduced to a state of exhaustion by too long fasting. I remember a case that made a great impression on me. It happened to a gentleman, a member of parliament, to whom I had given chloroform twice before; but on this latter occasion he took it at ten o'clock in the evening, on his return from his parliamentary duties. He had made a good luncheon at two o'clock, previous to his going to the House of Commons, where he had spoken for a long time, and got much excited. He had been told on a previous occasion to eat nothing for three or four hours before the operation, which advice he religiously followed, for he had fasted since his lunch eight hours before. He was a strong, powerful man; but the chloroform, on this occasion, had such an effect on his exhausted system that I had great apprehension as to the result; he was a long time before he recovered from the effects of the chloroform, and was then seized with a succession of fainting fits for two hours, and no sooner had one ceased than another supervened. In the intervals he was quite sensible, apologizing for keeping me, and declaring he felt quite well; and it was nearly one o'clock in the morning, and after I had plied him well with brandy-and-water and biscuits, that I felt I might leave him with safety. I was pleased to hear the next morning that he had slept well, and was none the worse for the chloroform. I have since been very careful that my patients have not been kept too long without food.

These cases will represent the principal dangers I have met with in the administration of chloroform—a branch of practice to which I have paid great attention ever since its introduction. To sum up, they may be divided into three heads:—

1st. Errors in previous treatment, principally in respect of food: where the patient has been kept too long fasting; or, on the other hand, has been allowed to take food just before the operation.

2nd. Injudicious management of the chloroform—that is, introducing it too rapidly, or pushing it too far.

3rd. That state of system in the patient which is found associated with a weak, flabby heart.

The first error, in all ordinary cases, may be avoided by common care.

For the judicious management of chloroform, some previous practical acquaintance with its administration is essential, especially in operations which threaten to be protracted. If space permitted I could give many cases in which sufficient anæsthesia has been maintained for very long periods without any bad effects.

As to the third class of cases, I will only remark, that in the present uncertainty which exists as to the physical signs of those conditions of the heart, we cannot expect always to diagnose them; but, I believe, by habitual care in the use of the chloroform, combined with that facility in appreciating danger which is acquired by practice, and by the prompt use of stimulants when danger does occur, the ratio of accidents may in future be greatly diminished.—*Lancet, July* 10, 1858, *p.* 33.

147.—HISTORY AND APPLICATION OF CARBONIC ACID AS A LOCAL ANÆSTHETIC.

By Dr. J. Y. Simpson, Professor of Medicine and Midwifery in the University of Edinburgh, &c.

[An excellent paper on this subject will be found in 'Retrospect,' vol. xxxiv, p. 349, by the same author.]

It has been previously stated by me, that I had tried the application of various anæsthetic gases and vapours to the vagina, in cases of vaginal irritation and neuralgia. The stronger forms cannot be borne. I was induced to try them in consequence of the following curious statement regarding *carbonic acid*, published by Dr. Pereira. ('Materia Medica,' vol. i., p. 155.) "A lady who had suffered a considerable time from some uterine affection, and had derived no relief from the treatment adopted, was advised to consult a physician in Italy (Dr. Rossi.) After he had examined the condition of the uterus, he assured her there was no organic disease, but merely a considerable degree of irritation, for which he proposed to apply *carbonic acid* as a sedative. This was done by means of a pipe and tube, communicating with a

gasometer situated in another room. The patient obtained immediate relief; and although she had been obliged to be carried to the doctor's house on account of the pain experienced in walking, she left it in perfect ease. On her return to England, she had a relapse of the complaint, and applied to Dr. Clutterbuck to know whether she could have the same remedy applied in London, in order to save her the necessity of returning to Italy." ('Provincial Medical and Surgical Journal,' 1848, p. 365.) When writing, seven or eight years subsequently, on the subject of the topical anæsthetic effects of carbonic acid gas, I took occasion further to observe:—"This case and paragraph, however, seemed to Dr. Pereira of so little value, that he omitted the details of it in the last edition of his work. But, from the time of reading it, I have tried at various times, and more particularly during the last two or three years, the local application of carbonic acid to the mucous membrane of the vagina and cervix uteri, in different painful conditions of the uterus and neighbouring parts; and, whilst it has failed in some instances to afford the expected relief, it has in others proved of great, and occasionally of almost instantaneous benefit." ('Obstetric Memoirs and Contributions,' vol. ii., p. 771.)

In the published essay from which I have made this extract, and which was written in the beginning of 1856, at the request of my friend Dr. Stewart Campbell of New York, for the Academy of Medicine of that city, I attempted briefly to prove—1. The strong constitutional anæsthetic effects of carbonic acid when breathed, by referring to the well known experiment of the effects of it upon the dog when temporarily plunged into the gas contained in the Grotto del Cane at Pozzuoli; 2. Its local anæsthetic powers, as shown when a stream of it was directed upon any sensitive part of the surface of the body; and 3. Its curious topical effects when applied to different morbid and supersensitive parts. At the same time, I took occasion to show that the practice of applying carbonic acid locally was in principle by no means a discovery of late times. In some very practical observations by Dr. Johns of Dublin (part of which has been cited in the 'British Medical Journal' for April 10th, 1858), that gentleman observed: "I cannot say to whom the credit of discovering its sedative and curative powers is justly due, as that question, I believe, is still in abeyance. Dr. Simpson, of Edinburgh, is the person who has brought them so prominently before the profession; but, (adds Dr. Johns) Mojon used this gas long prior to him; and report now states that some recommended it prior to the latter named gentleman: however, one thing is very certain, that it has been resorted to, in the form of effervescing draughts, and in chalybeate waters, through the medium of baths and injections, as long as the most senior among us can remember, although perhaps the advantages thence arising may have been attributed to other causes."

In the essay 'On Carbonic Acid Gas as a Local Anæsthetic in Uterine Diseases,' &c., presented to the New York Academy of Medi-

cine, and published in the second volume of my 'Obstetric Memoirs,' I have tried to state at some length the principal historical points, as far as I then knew them, connected with the employment of this agent in medical practice. A brief recapitulation of these points from the essay in question will show that the therapeutic history of carbonic acid gas as a local application not only includes all the matters above adverted to by Dr. Johns, but embraces others of as great, if not greater interest.

In the essay alluded to, I endeavoured to bring evidence to prove the following facts regarding the local application of this gas as a therapeutic anodyne agent to the following surfaces and parts :—

1. Carbonic acid has been recommended as a local anæsthetic in some uterine diseases; in modern times, by Dewees in 1835, by Mojon (1834), and Rossi; apparently also by Rueff and Ambrose Paré in the middle ages; and by Paulus Ægineta and Hippocrates in far more remote times.

2. Carbonic acid has been used in the form of injection into the lower part of the bowel, in diarrhœa and dysentery, by Mr. Parkins in our own day; and in the last century, by both Mr. Hey of Leeds and Dr. Percival of Manchester in 1772; and during the later years of the same century, by Drs. Warren, Henry, &c.

3. Carbonic acid was about the same time applied in a case stated by Dr. Percival, as a local sedative or anæsthetic in painful aphthous ulcer at the point of the tongue.

4. Carbonic acid was also, in the latter part of the eighteenth century, applied as a local sedative to the cutaneous surface of the body in ulcers, open cancerous sores, &c., by Percival, Ewart, Beddoes, &c. Indeed. the antiquated yeast poultice of surgeons probably acted principally as a sedative by virtue of the carbonic acid constantly eliminated from its surface.

5. Carbonic acid has been prescribed constantly by physicians, in sickness, vomiting, &c., as a sedative to the interior of the stomach, in the form of effervescing draughts, ever since these draughts were introduced into practice two centuries ago, by Rivérius.

6. In the same essay. I suggested that the anæsthetic powers of carbonic acid, when topically applied, afforded a probable explanation of the local anodyne and sedative effects of vaginal, &c., injections of those German waters which contained free carbonic acid; and gave us a clue also to the comprehension of the curative influence of the gas baths and gas douches of Neuheim, Marienbad, &c.

Having adverted in my original paper to all these previous and various therapeutic uses of carbonic acid by different physicians and surgeons, and under different forms, I trust that I shall not be accused of having brought forward the practice as anything very novel, when I called, two or three years ago, the special attention of my professional

brethren to the curative effects of carbonic acid as a local anæsthetic. I certainly did not, by any means, claim the practice as "Scottish in its origin."

But my esteemed friend Dr. McClintock, the distinguished master of the Dublin Lying-in Hospital, has claimed the idea as fundamentally "Irish." In the 'Dublin Medical Press' for March 17th, Dr. McClintock writes, that he has "much pleasure" in stating a fact, the publication of which (says he) "may prevent *needless* controversy about priority of claims" in reference to this use of carbonic acid; viz., "that the local application of this agent as an anæsthetic was known to the justly celebrated Dr. David McBride, of Dublin," who "made it the subject of a communication to the Medico-Philosophical Society of Dublin about the year 1775," though his communication is as yet unpublished.

It would surely not be uninteresting to publish Dr. McBride's observations, even thus late, if they are of any value. But from the high and candid character of that physician, I should feel inclined to doubt if he lays claim, in the unpublished paper alluded to, to any priority in the local medicinal application of carbonic acid, as the employment of it had been already spoken of in those published works and letters of Priestley, Hey, and Percival, to which I have referred, and with those writings Dr. McBride was no doubt sufficiently familiar; not to speak of physicians of still more antique date. In a letter of the celebrated surgical author, Mr. Benjamin Bell, published by Dr. Thomson, and written on March 30th, 1772, that gentleman tells Dr. Cullen, among other "London medical gossip" of that day, two circumstances; viz., 1st. that the "*Theory and Practice of Physic*, by Dr. McBride, was published two days ago, but I have not seen it;" and 2nd, he had heard Dr. Priestley read a paper at the Royal Society, mentioning the trial of an injection of carbonic acid into the bowels in a case of fever. (Dr. Thomson's 'Life of Dr. Cullen,' vol. i, p. 648.) Neither in his 'Experimental Essays' (1764), nor in his 'Practice of Physic' (1772), does Dr. McBride, as far as I remember, allude to any topical use or application of carbonic acid; and yet Mr. Bell's letter shows that the gas was tried therapeutically in London at the date, or rather before the date of the appearance of his last published work. Further, however, Priestley, Hey, Percival, &c., had written and published on the subject two or three years before the supposed date of the reading of Dr. McBride's unpublished paper in 1775. In fact, if the practice is to be claimed as Irish, Dr. McClintock will I fear, require to prove that Hippocrates, or at least the author of the Hippocratic 'Treatise on the Diseases of Women,' was a cadet of some Milesian family, who had returned from Ireland to Greece; and I have rather strong suspicions that adequate evidence of this descent will transcend even the boundless genealogical knowledge of my two learned friends, Professors Currie and Donovan.

Parts and Surfaces to which Carbonic Acid may be applied.—In the preceding remarks, we have seen that carbonic acid has been formerly applied in some form as a local anodyne or anæsthetic to various parts or surfaces; as—

1. *The Vagina and Uterus.*
2. *The Rectum and Lower End of the Intestinal Canal.*
3. *The Interior of the Stomach.*
4. *The Surface of the Tongue.*
5. *The Ulcerated Surface of the Skin, Mamma, &c.*

There are other surfaces and structures upon which I have found the local application of carbonic acid act sometimes with remarkable success as a local anodyne or anæsthetic; as—

6. *The Mucous Surface of the Eye.* I have used it principally in cases of photophobia and hyperæsthesia of the eye connected with scrofulous ophthalmia, where often it gives speedy and marked relief. A few drops of chloroform evaporated from the palm of the patient's hand and held near the eye will generally, in the same way, allow a photophobic eye to open, and form an application far more easily used, and as curative as any medicated liquids or collyria dropped into the eye.

7. *The Mucous Surface of the Bladder.* In my essay on carbonic acid as a local anæsthetic, I mentioned a case of dysuria and great irritability of the bladder, in which, after many modes of treatment had failed, the injection of carbonic acid gas into the vaginal canal several times a-day at once produced relief, and ultimately effected a perfect cure. I lately heard of this patient remaining perfectly well.

Before 1732 the celebrated Dr. Hales had described to the Royal Society the injection, without injury, into the bladder of the dog of a menstruum, consisting, to use the words of Dr. Willis, "of a mixed solution of bicarbonate of potash, sulphate of potass, and *carbonic acid* in water." ('Uriniary Diseases,' p. 330.) In consequence of his attention being directed to the subject by my paper, as analysed by M. Follin in the 'Archives Générales de Medécine,' M. Broca injected carbonic acid into the bladder, and published some of the successful results which he obtained in the 'Moniteur des Hôpitaux' for August 1857. More lately (March 1858), Dr. Johns has brought the same method of treatment under the notice of the profession in Dublin. In my earliest experiments upon injecting carbonic acid into the bladder three years ago, I erred in not having a sufficiently sized catheter, or limb of a double catheter, to carry off the gas as it accumulated in the bladder. I latterly resumed the practice principally in consequence of the representations of success from it obtained in Paris and Dublin. And perhaps I shall be excused for remarking that there is no class of ailments more distressing, or more difficult to treat, than the different forms of morbid irritability of the bladder, and in the management of the affections I have obtained far more favourable results from the local application and injection of carbonic acid than I could have ventured to anticipate. I have now repeatedly seen dysuria and

extreme irritability of the bladder speedily relieved by a few injections of carbonic acid gas; and patients who were obliged from these causes to rise many times each night have been enabled by its use to sleep continuously for the usual number of hours. The freedom and safety with which carbonic acid and some other medicinal fluids and liquids may be injected into the cavity of the bladder with a double catheter will probably be ere long more fully acknowledged by the profession, and great practical advantage taken of this fact in the treatment of dysuria and other morbid states of the bladder.

In one of his letters to Dr. Priestley, dated 1775, Dr. Percival states that he had found "by repeated trials that calculi are soluble in water impregnated with fixed air," or carbonic acid; and he adds that it had acted in his experiments "upon every calculus which was suspended in it." He and Dr. Home hoped that carbonic acid given in effervescing drinks by the mouth would reach the bladder as carbonic acid, and there act as a lithontriptic upon the contained calculus. But if carbonic acid can act upon some forms of urinary calculus as a dissolvent, we know that it can be introduced freely and continuously by a double catheter into the bladder. In a most interesting case reported by Sir Benjamin Brodie, the repeated injection of a very weak solution of nitric acid into the bladder successfully dissolved and removed a phosphatic calculus; and he has found the same solution relieve chronic inflammation of the lining membrane of the bladder. On the contrary, it has been further long known that a calculus, probably of lithic acid, was broken down and removed by Professor Rutherford and Mr. Butter by free and frequent injections of tepid lime-water into the urinary bladder. Surely the time is not far distant, when a higher chemistry will thus enable us to remove some calculi at least without the horrid necessity of the knife or lithontrite.

8. *The Mucous Surface of the Trachea and Lungs.*—In forming carbonic acid for application as a local anæsthetic, I have generally placed together six drachms of crystallised tartaric acid, and eight drachms of bicarbonate of soda in a common wine bottle, and added four or five ounces of water. The gas is allowed to escape through a perforated cork, and I attached a caoutchouc tube to the part to which it is applied. The conical-shaped perforated cork fixing the flexible caoutchouc tube into the mouth of the bottle, consists centrally of a metallic tube, inclosed in a thin layer of common cork, and the whole sheathed externally with a layer of caoutchouc to render its immediate insertion into the neck of the bottle close and tight fitting. The distal extremity of the caoutchouc is usually provided with a flattened glass tube, which is placed inside the mouth when the carbonic acid is used for inhalation. In a considerable number of instances of chronic bronchitis, asthma, irritable cough, &c., I have directed the patient to breathe the carbonic acid, which escaped from the above mixture. by placing the end of the tube in his mouth. In a large proportion of these cases the relief obtained has been most

striking; and in several chronic instances the benefit has been at once both speedy and permanent. The quantity of gas thus set loose and inhaled is not so very great in quantity as the rapid and continuous rush of it into the patient's mouth would lead a person to suppose; and it acts. I believe in these cases as a local sedative or anæsthetic applied to the whole lining pulmonary membrane, like the smoke of stramonium, or the vapour of chloroform. The common idea that spasm of the glottis will come on whenever carbonic acid is breathed in any considerable quantity, will be found quite incorrect. I will take an early opportunity of stating in the 'British Medical Journal' the unexpected results of this practice; one which, even after all, is, I find, not quite novel, as, in the last century, Dr. Percival tried in phthisis pulmonalis the inspiration of fixed air or carbonic acid "by inhaling the steams of an effervescing mixture of chalk and vinegar, or of vinegar and potash," and Drs. Lettsom, Withering, and Hulme tried a similar method.

9. *External Wounds and Burns.*—Seeing, first, the great and speedy relief to pain in cancerous and other sores obtained through the local application of carbonic acid by Ewert and Ingen-Housz; and, second, the tendency to cicatrisation observed even in some malignant ulcers when carbonic acid was kept in contact with them, I ventured in my paper on the subject to suggest the topical employment of carbonic acid to surgical wounds and burns, as at once both relieving suffering, and being one of the best means for producing rapid healing and cicatrisation. If found successful. it would not be difficult to devise simple means of applying it as a constant dressing. But no sufficient experiments, so far as I am aware, have been as yet made upon the matter.

10. *Extraction of Teeth.*—I would suggest that perhaps carbonic acid may possibly be yet found useful as a local anæsthetic under a different form. and in a different mode from those already alluded to. Teeth have been now often extracted without pain when the gum was frozen with ice and salt, or ice and muriate of ammonia. But the application of these freezing mixtures, is tedious, difficult, and uncertain. If the chemist could show us a safe, simple, and cheap means of making and keeping *solid* carbonic acid, would not the application of the solid flakes of carbonic acid freeze the gum (or, indeed, any other part to which it was applied) sufficiently to produce the necessary degree of local anæsthesia?

In the preceding remarks I have scarcely referred, except incidentally, to the question of the utility of carbonic acid as a local anæsthetic when applied to various mucous surfaces and exposed external structures. Let me only in the meantime add, that all my subsequent experience has, in my opinion, more than confirmed the views which I ventured to publish two or three years ago with regard to its practical utility and efficiency as a local sedative or anodyne agent. The late observations of Drs. Churchill, Johns, &c., in our

own country, and of Follin, Broca, Bernard, &c., in France, all tend further to prove and establish the advantages to be often obtained in practice from the employment of this therapeutic agent as a topical anæsthetic.—*British Med. Journal, June* 12, 1858, *p.* 474.

118.—*Inhalation of Carbonic Acid as an Anæsthetic. (From the French of Dr. Ozanam.)*—The effects of carbonic acid resemble those of ether, according to the author, but are more fugitive; and while it is necessary in the case of ether to interrupt the inhalations after short intervals, an opposite procedure is required for carbonic acid.

a. As long as one wishes the sleep to be prolonged, the inhalations must be continued.

b. These can be prolonged ten, twenty, thirty minutes and more, without danger to life.

c. When the inhalations are stopped, the waking is almost always immediate.

The experiments of Ozanam and Faure have never resulted in death. When death does take place, it is slow, progressive, and one can predict for some time in advance the moment of its arrival, by considering, as Faure has done, the condition of the heart and the pupils. The following experiment, related by Ozanam, is most interesting.

I had prepared by Mons. Fontaine a gas bag containing about 100 litres of carbonic acid, being resolved to prolong the anæsthesia as far as possible. The animal was put to sleep in three minutes, without convulsions, and remained on its side in a quiet sleep without being held. The inhalations were continued for 87 minutes, and the apparatus was then withdrawn; full sleep lasted five minutes more; towards the tenth minute the paws began to be agitated; at the fifteenth the animal arose. One hundred and two minutes were thus consumed in the experiment—a time much longer than is required by the longest operations.

We believe that Faure and Ozanam purpose the use of *asphyxiated anæsthesia, or anæsthesia produced by carbonic acid*, for man. Faure and Ozanam say, that they have respired the gas, if not to the point of producing sleep, at least until they felt the first effects. Its taste is slightly piquant, about as pleasant as that of ether, and it is an excitor of the saliva. Ozanam says that the ethers, chloroform, and carbonic oxide determine anæsthesia by robbing the arterial blood of its oxygen, so as to produce carbonic acid, and thus making the blood venous. Carbonic acid itself does not decompose the blood; it removes no vital principle from it, but contributes progressively, and so that it can be graduated at will, the necessary quantity of carbon to determine the insensibility.—*American Med. Monthly, July* 1858, *p.* 35.

149.—ON THE RELATIVE IMPORTANCE OF DISEASE OF THE AORTIC AND MITRAL VALVES OF THE HEART.

By Dr. Samuel Wilks, Physician to Guy's Hospital.

In looking through our cases of heart-disease, and observing the histories accompanying them, we think we discern the reason for the difference of opinion entertained respecting the duration and relative importance of the two forms above mentioned. Judging simply from clinical experience we should incline to second the opinion generally held respecting them, that the mitral is the more severe disease, that is, that when the patient with this form of malady comes before us he is very often (at least in hospital practice) suffering from dropsy and other symptoms denoting speedy dissolution, whereas the patient with aortic disease speaks of symptoms which have had longer duration and less severity, and he perhaps leaves us again in improved health. Judging then from the duration of illness or loss of health, in the two cases, we conclude that the general opinion is correct as to the greater severity of the disease which has its origin in the mitral valve. If however, we endeavour to discover the time at which the respective maladies commenced, we may readily arrive at an opposite conclusion, but then we are obliged to adopt a different method in the two cases. In the first place, we must enquire what is the origin of the two forms of disease. Our own records most fully corroborate the opinion that disease of the left auriculo-ventricular orifice has its origin in a rheumatic endocarditis, and that the disease of the aortic orifice is due generally to a strain on the vessel or valves, and occurs for the most part in men who are accustomed to work hard and use strenuous exertions with their arms. Disease of the aortic valves undoubtedly may arise from endocarditis, but in the majority of instances it appears to arise from the cause named; but whether this be from undue pressure acting on the vessel through the parietes of the chest, or whether from an over-strain of the blood on the vessel internally, is a question not yet decided. We have then two classes of cases (of course with numerous exceptions) of valvular disease, that of the mitral and that of the aortic valves, and since the former so generally arises during a rheumatic attack we generally date its origin to the time at which that occurred, whereas, in the latter case, we can do nothing but discover the duration of the symptoms, and date the commencement of the disease to their first recognition. In one case we inquire about the rheumatic attack, and in the other how long symptoms denoting cardiac disease have existed. In the majority of the latter cases, which are those of men who are sawyers, dealporters, &c., and accustomed to great exertions, we find that the symptoms have existed only for two or three years before death; in some cases the time is longer, but this appears to be the most usual period for the progress of the malady; whereas, in the case of disease of the auriculo-ventricular orifice, although we may not have a history of

marked symptoms for so long a period, yet the patient may allude to some slight distress connected with the circulation for a period dating from a rheumatic attack perhaps twenty years before, though in many cases there have been no symptoms whatever. Judging from a large number of cases, we think the conclusion is correct, that the disease of the mitral valve has been for the most part of longer standing than that of the aortic; but then the question at once arises, because an inflammatory process was set up at the period supposed or even a contraction of the orifice then took place, does it necessarily follow that such an impairment of the apparatus occurred as to constitute it a disease, or make it productive of manifest symptoms which might be styled unequivocally cardiac? We think in all probability in these cases of contracted mitral orifice no great impairment of the orifice took place, seeing that no marked symptoms had been present, and we cannot even look upon the changes which may have occurred in the cavities of the heart as an indication of the duration of its existence. The enlarged and hypertrophied left auricle, and increase of right side of heart does not explain how long the contracted orifice has existed, any more than the enlarged left ventricle does the aortic mischief. This difficulty in knowing how long a contraction of the mitral valve has existed, recurs in every case met with; we date the first onset to the rheumatic attack, even should this have occurred several years previously; but then the question arises, did the contraction altogether occur at that time, but that owing to subsequent conservative changes in the heart and generally diminished circulation, of which the mitral orifice is the measure, no symptoms of cardiac disease existed? or has the change in the valve been essentially chronic and progressing during several years? or was the alteration in the first place slight, and subsequently during the time of the last fatal illness the more important changes occur? Whichever view may be taken, there can be no doubt that very important changes do take place during this latter time, such as chalky degeneration, alterations in the muscular tissue, &c., which necessitate regurgitation through the orifice and the more urgent symptoms.

In commencing to make these remarks upon this question we had intended to take the duration of the disease in the two classes of cases, and striking an average, show the difference between them. This, however, we shall not do, as it might lead to error, for reasons above named, and also because the history attached to the *post-mortem* records have been derived from other sources than our own, and the dates of the illnesses cannot be accurately depended upon; still, on looking through a large number of cases on which we can rely, the inference is as stated—that taking the duration of the severe symptoms, or the time in which the patient has called himself ill, the disease of the aortic valves has continued for a longer time, that is two or three years, while that of the mitral only for a

few months. And on the other hand, as in the one case we have no knowledge of the existence of the disease otherwise than connected with symptoms, and we only date it back to their commencement, whereas, in the case of mitral disease we date it to an inflammatory attack which has generally occurred several years before, we find the opposite rule holds good, that disease of the mitral valve is of much longer duration before a fatal issue than disease of the aortic valves.

These remarks we think explain the different opinions which we have heard expressed respecting the relative severity and importance of the two lesions, but they do not solve the question; this we think can only be done by carefully watching several cases during many years. If, for example, in the two classes of cases, the time of onset of disease could be accurately known, and the cases watched to their conclusion, some approach to accuracy might be obtained, though even then it is possible that slight changes might have existed for years without symptoms. We believe most physicians would admit that a regurgitation through the mitral orifice was more important than a similar condition of the aortic; but it is another matter how long the two affections may have been in process of production, and although the one may be a more important lesion than the other, and the disease more speedy when such lesion obtains, yet the process preceding this may have been of much longer standing, being in fact a slower change, the result of inflammation unattended by symptoms, while the other disease might be called accidental, and at once productive of slight disturbance. This we believe to be a fair conclusion from the result of our cases, not very precise we admit, but we are unwilling to add any greater weight to our statements by the addition of figures, our object being at present merely to afford an explanation of the different opinions which have been expressed on this subject.—*Guy's Hospital Reports, Vol. IV.*, 1858. *p.* 54.

150.—GALLIC ACID IN FUNGOUS HÆMATODES.

Under the care of Thos. Tatum, Esq., at St. George's Hospital.

(Case and remarks by C. Hunter, Esq., House Surgeon.)

[The following instance of the effects of an internal remedy on malignant growth, is interesting. The patient was only eight years of age, and was admitted with a tumour about the size of the eye itself, and situated behind, and consequently protruding forward that organ. It had only been apparent two or three weeks, and after his admission to the hospital rapidly increased—no operative measures being had recourse to owing to its situation.]

As it grew larger, the eye, being pushed before it, gradually dwindled, and became at last a shrivelled-up and hardened excrescence on the outer part of the protruding mass.

In the course of four months (from time of admission) the tumour had become as large as the head of a seven months fœtus, and of such a size as to overlap the mouth, so that he had to be fed by a pipe at the further corner of it.

At this period (beginning of August), the surface of the tumour was irregular but rounded, the greater part of the surface was in a raw ulcerated condition, exceedingly vascular and constantly bleeding, often to such an extent that every attack appeared likely to be the last.

These hemorrhagic attacks were generally treated by cold, by pressure, and by the local application of blue lint. The boy was living on generous diet and wine. On the 2nd of August, after one of these attacks more serious than usual, which quite bleached the face, and much weakened the pulse (always weak and rapid), I gave him gallic acid in four grain doses, in infusion of bark, to try, if possible, to arrest the bleeding.

August 30, one month afterwards. Curious as it may appear, the gallic acid had been productive of the most marked effect, the tumour from that time had never bled once, nor even had there been the least oozing of blood. The surface of the mass became more healthy, less vascular, more solid, and *considerable diminution* of the tumour had taken place. After this, for a few days, increase of the tumour again occurred, but no bleeding took place from it. The increase in size was met with an increased dose of the gallic acid, which was again productive of benefit.

Present State, Sept. 25. 1st. The tumour is about nine inches measured over the longest diameter, and eight and a quarter over the shortest; this is much less than it was two months ago, so that the boy can now feed himself easily, the mouth not being at all overlapped, whereas before he required feeding. 2nd. Not the least bleeding has occurred since the first dose of the gallic acid, which was given now nearly two months ago. 3rd. The health, strength, and appetite of the boy appeared improved.

In recording this case it is only meant as an instance of the palliative effect of a remedy on malignant disease; it is the more curious that the gallic acid has had the striking effect it had, because of the exceedingly vascular and raw state of the surface. The least movement, the least cry before the administration of the acid, used to occasion a sudden rush of blood from several parts of the tumour. That the tumour should have decreased in size is not less remarkable than that all hemorrhage for so long a time should have ceased.—*Med. Times and Gazette, Oct.* 9, 1858, *p.* 374.

151.—*Case of Nævus Cured by Injection with Tannic Acid.* By Dr. Francis Quinlan, Surgeon to St. Vincent's Hospital, Dublin.—Eliza B., aged nine months, has a subcutaneous nævus on the left cheek, about midway between the angles of the mouth and jaw. Her

mother states that she observed this immediately after birth; it was then almost imperceptible, but has gradually increased, until it is now somewhat larger than a shilling. It can be almost emptied by pressure. The skin covering it is healthy. Two veins of considerable size lead from it.

Saturday, August 21. I introduced a cataract needle into the upper portion of the nævus, and broke up its structure. I then inserted a very fine platinum canula, and, by means of a small platinum screw-action syringe, constructed for this purpose, injected a scruple of solution of tannic acid, of the strength of a drachm of acid to the ounce of distilled water. I repeated the same manœuvre in the two other most prominent parts, until the nævus became well distended. Coagulation quickly ensued, as was shown by the almost stony hardness which the nævus assumed.

Eight, p.m., same day. Left side of the face considerably swelled; nævus somewhat inflamed. Ordered the part to be fomented with cloths wrung out of hot water. To take a little hydrarg. c. cretâ.

August 23. The swelling of the face is quite gone down; the nævus appears to be undergoing a kind of chronic inflammation; the epidermis over it is desquamating.

Friday, September 3. The site of the nævus is occupied by a tumour resembling the induration left after a boil. There is no trace of dilated vessels. The two veins before alluded to have almost disappeared.

September 7. The induration appears to be undergoing gradual absorption; the three openings made by the canula are healed up.

This plan is recommended by Mr. Haynes Walton, in the 'Lancet' of May 8th, of the present year. He states that solution of tannic acid is preferable to tincture of perchloride of iron, inasmuch as it produces a peculiar coagulation of the blood, and is free from the risk of sloughing.—*Dublin Hospital Gazette, Sept.* 15, 1858, *p.* 278.

152.—ON INFRA-MAMMARY PAIN.

By Dr. Charles Coote.

(Read before the Harveian Society of London.)

The author remarked that pain immediately below the left breast, not of rheumatic origin, and unattended by any signs of visceral disease, had been recognised for about forty years as a very frequent, and often a severe and intractable, malady. Nevertheless, its pathology might be regarded as absolutely unknown, and its treatment was, of course, proportionately uncertain. It seemed, therefore, worth while to re-open the subject by the observation of fresh facts. He had, therefore, analysed a series of fifty cases, with the view of determining, firstly, the true characters of the pain, and, secondly, the conditions under which it was prone to occur. In the first place, it was

necessary to distinguish between two painful affections, to both of which the infra-mammary region was liable, and the confusion of which seemed to account for many contradictions in earlier descriptions. The one (to which the name of intercostal neuralgia ought to be restricted) might affect any part of the thoracic walls. Its character was acute, plunging, paroxysmal. It was seated in one or more intercostal spaces, chiefly in those parts where the cutaneous branches of the nerves are most freely distributed, and it sometimes appeared to shoot round the chest, as if along the course of a nerve. There was occasionally much superficial tenderness, and the pain was sometimes periodical. The author thought it probable that the pain of herpes zoster and that of mastodynia belonged to this category. The other pain (improperly confounded with that just described) was much more common. It was a dull, aching pain, situate in one definite locality under the left breast, and extending, generally, over the seventh, eighth, and ninth ribs, with the seventh and eighth intercostal spaces; never appearing to shoot along the course of a nerve, but often darting through the chest to the back or into the throat; in the former case, seeming to give rise to the interscapular pain; in the latter, being intimately associated with the hysterical globus. It was rarely marked by any considerable tenderness on pressure, and it was not periodical. It was to this affection alone that the author wished to draw the attention of the society, under the (provisional) appellation of infra-mammary pain. Having discussed in detail each of the characters of the pain, he examined briefly the most popular hypotheses which had been devised to account for it. He dissented from Dr. Inman's view (that it is a true muscular pain, the exponent of fatigue or of mal-nutrition), on the ground that it entirely failed to explain the localisation of the pain. There was no condition in the modes of life of the patients calculated specially to affect the pectoral and abdominal muscles of the left side. A more plausible hypothesis connected infra-mammary pain with uterine or ovarian disorder. Here a preliminary question arose, which the literature of the subject entirely failed to solve—whether the pain was peculiar to females? It was certainly of rare occurrence in the male; but the author thought he had noticed two unambiguous cases of it within the last eighteen months. Leaving this question open, and assuming, for argument's sake, that it was limited to females, he proceeded to inquire whether, in them, it was dependent upon uterine disorder. With respect to age, he found that the period of uterine activity was the favourite, but not the exclusive, epoch of the pain. Marriage exercised no perceptible influence upon it. Overlactation and excessive child-bearing were recognised in a few instances only. Four women were sterile, seven had a liability to abortion. The menstrual function was physiologically absent in 20. Of the remaining 30, it was perfectly normal in 11; regular, but scanty, in 7; regular, but profuse, in 4; irregular or absent in 8. Leucorrhœa was acknowledged

in 10 cases only: in 6 of which uterine disease existed. These facts appeared to be conclusive against the hypothesis. That uterine disorder frequently accompanied infra-mammary pain was certain; that it should be the cause of it was impossible; for those two things could not stand to each other in the relation of cause and effect, each of which might exist in the absence of the other. The next hypothesis was that of "Spinal Irritation." This term had been so stretched as to become meaningless, but the original idea differed very little from that of "central neuralgia." That infra-mammary pain depended upon some central (spinal) disorder, might or might not be true; but it was wholly unproved: and the attempt to prove it from spinal tenderness in such cases was doubly unfortunate. For, firstly, spinal tenderness was by no means a constant companion of infra-mammary pain; and, secondly, if it were so, it would be no evidence of spinal disease. The next hypotheses discussed were those of Ollivier and of Brown of Glasgow. Both agreed that the pain was the result of pressure upon the roots of spinal nerves; the former referring it to a congestion of the intra-vertebral plexus of veins, the latter to a transient curvature of the spine, occasioned by disproportioned fatigue of some one set of spinal muscles. These opinions were out of the sphere of argument. For, first, it was very doubtful whether such pressure would produce pain at all, and not rather anæsthesia; and, secondly, there was absolutely no evidence of the existence of any such pressure. Another explanation, also based upon the idea of pressure, had been propounded by Henle; and this possessed the singular merit of recognising, and, in some measure, of accounting for, the localisation of the pain. The anatomical character by which the left infra-mammary region was distinguished was the peculiarity of its venous circulation; the effect of which was that, if any obstruction existed to the return of the venous blood by the azygos vein, the brunt of the pressure would fall upon the immediate intercostal spaces of the left side. Henle thought that such pressure, acting upon the peripheral extremities of the intercostal nerves, might occasion the pain; and he sought to dovetail his theory in with other received views, by suggesting that the first impulse to disturbance of the circulation might be given by uterine or ovarian congestion. There was little to object against this explanation, if the uterine element were eliminated from it, and the more physiological notion of interrupted nutrition were substituted for the mechanical idea of pressure. One link was, however, still wanting; viz., some proof that, in these cases, vascular disturbance exists. The author then gave the results of his own analysis. The constitutional character of the patients was well marked; being universally that of defective nutrition. Twenty-one were anemic. The concurrent diseases were phthisis, secondary syphilis, and diabetes mellitus. The functional derangements accompanying infra-mammary pain were grouped under four heads. 1. Disorders of the nervous system, consisting of *(a)* various

pains, of which the interscapular alone appeared to be essentially connected with the infra-mammary; and *(b)* spasms; especially the globus, and hysterical or epileptiform fits. In three instances these latter were always preceded by infra-mammary pain. 2. Disorders of circulation; variability of temperature, irregularity of the pulse, palpitation of the heart. 3. Derangement of the abdominal viscera; vomiting, of porraceous or grumous matter, or of blood; constipation, or diarrhœa; the urine alternately "hysterical," and loaded with lithates. 4. Disorders of the reproductive system; uterine disease, leucorrhœa, irregular menstruation, sterility, abortion. The author proceeded to argue that the three latter groups might be readily referred to one head—disorder of the vasomotory system of nerves. For that it was experimentally certain that paralysis of these, the motor nerves, of the smallest arteries, had, as its immediate physical result, exalted temperature and local congestions and fluxes; and hence it seemed probable that to temporary depression of these nerves might be owing the irregular flushes, the porraceous or grumous vomiting, the deranged renal secretion, the ovarian and uterine disorders, so common in these cases. And as the muscles of the intestinal tube were supplied by nerves of the same order, the same hypothesis would explain the occurrence of obstinate constipation, associated as it is with hyperæmia of the mucous membrane. Hence he inferred, first, that infra-mammary pain was a symptom of a generally depressed state of nervous power; and, secondly, that it was one of a group of symptoms intimately connected with vasomotory, and, therefore with vascular, derangement; thus, returning to the hypothesis proposed by Henle, and supplying the defective link. The conclusions drawn were as follows:—True infra-mammary pain was a peripheral neuralgia, having its probable origin in mal-nutrition of the nerves of the part. This, again, resulted from disordered circulation affecting the left infra-mammary region especially, by reason of its peculiar anatomical relations. The immediate cause of this vascular derangement consisted in disordered enervation of the smaller arteries of the whole body, occasioning irregular spasms and dilatation of their walls; a condition which, while in the infra-mammary region it occasioned neuralgia, in other parts gave rise to chills and flushes, to palpitation, to excessive or defective secretion, to congestions, hemorrhages, and fluxes; while an analogous state of the motor nerves of the alimentary canal produced obstinate constipation. The cause of this disordered state of the vasomotory nerves was to be sought in more general conditions. The female, possessing naturally greater nervous irritability than the male, and physiologically destined to undergo great developmental changes, was far more liable to all these derangements, especially when suffering from want, or exhausting toil, or depressing or debilitating sickness. But there seemed no reason to deny the possibility of their occurrence, under analogous conditions, in the male. If these views were correct, the indications for treatment

were twofold; first, to stimulate the vasomotory nerves into temporary activity, so as to relieve special symptoms; secondly, to give them permanent vigour by improving the general nutrition of the body. With respect to the first indication, the special nervine stimulant had often produced satisfactory, although temporary results. Counter-irritation nearly always gave temporary relief, probably by unloading distended vessels. It was equally efficacious when applied to any part of the affected side. Topical applications to the vagina and uterus, in cases of leucorrhœa, &c., had produced no effect upon the pain. Sometimes the leucorrhœa was cured, leaving the pain as bad as ever; sometimes the pain disappeared, the leucorrhœa persisting. The second indication could be only briefly alluded to. Good food, air, above all rest, were essential; and to them tonic medicines were merely auxiliary.—*Med. Times and Gazette, July* 10, 1858, *p.* 47.

153.—ON ACUPUNCTURE.

By Dr. T. Ogier Ward, Kensington.

I have read in the 'Journal' with much interest the lectures of Dr. Brown-Sequard, especially the fifth, which seems to be the most practical, inasmuch as the experiments detailed proved that irritation, &c., of one part, may be transmitted by reflex action to another more distant part, in the following manner. The irritation is conveyed by an afferent nerve to the nervous centres, and thence is reflected to the more distant part through the sympathetic, which, by producing a contraction of the vessels, reduces the hyperæmia of the affected part. In this way Dr. Brown-Sequard explains the benefit derived from the actual cautery in facial neuralgia and affections of the eyes, when applied to the ear of the same side, or even between the shoulders. A completely opposed explanation of the action of the actual cautery has been recently given by Dr. Inman, in a paper read to the Lancashire and Cheshire Branch; and certainly Dr. Brown-Sequard's experiments, though they establish the facts in some cases, do not afford any explanation why this action of the sympathetic nerves is confined to a part in a morbid condition, and does not extend, at least, as far as can be ascertained, to the whole system. But whether Dr. Brown-Sequard or Dr. Inman be right, *non est meum tantas componere lites;* the object of the present communication is to offer an explanation, deduced from Dr. Brown-Sequard's experiments, of the benefit derived from two operations much less severe than the actual cautery, which, from its formidable appearance, is never likely to be used extensively in this country, at least, in private practice.

The operations I allude to are, the injection of opiates beneath the skin over the nerve affected in tic douloureux, and acupuncture; in both of which, the great and immediate benefit, by the cessation of the pain, is to be attributed to the punctures, and not to the opiate

injected. I do not deny that the opiate may be absorbed, and produce a certain amount of direct effect on the nerve where this is situated superficially; and the profound sleep produced in some instances must be attributed to the opiate; but in cases where the injection has been successful in deeply-seated pains, I believe we may reasonably ascribe the cure to the simple puncture, especially as we meet with the same results from acupuncture. Hitherto the *modus operandi* of acupuncture has been involved in mystery, but now Dr. Brown-Sequard's discovery of the reflex action induced by counter-irritation, appears to afford at least a plausible explanation of it.

Acupuncture is a remedy that seems to have its floods and ebbs in public estimation; for we see it much belauded in medical writings every ten years or so, even to its recommendation in neuralgia of the heart; and then it again sinks into neglect or oblivion; and it is not unlikely that its disuse may be occasioned partly by fear of the pain and partly by the difficulty the patient finds to believe so trifling an operation can produce such powerful effects. Another reason for its neglect may be, that, like every other remedy, it fails occasionally, and the practitioner, disgusted at having persuaded his patient to submit to a pain, which, though slight, has been attended with no benefit, will not again undergo such a disappointment. However this may be, its use is not as frequent as it deserves; and now that we know the *rationale* of its operation, I venture to bring forward a few cases in illustration of its remedial powers, in order that others may be induced to give it a more extensive trial, and thus ascertain its true value in the treatment of neuralgic or rheumatic pains.

Case 1.—A middle aged labourer came to me with a chronic rheumatism of the parts about the right shoulder, particularly in the deltoid, which was so painful that he could not raise his arm horizontally. I inserted two needles into the muscle, one just below the head of the humerus, and the other near the insertion of the muscle, and in about a quarter of an hour he could lay his hand on his head, and in a few days was quite well, without a second operation.

Case 2.—An elderly labourer, suffering from rheumatic pain and stiffness of the rectus and other muscles in front of the right thigh, so that he dragged the limb in walking, was enabled to walk without much limping, after the insertion of three needles down the front of the thigh for a period of twenty minutes; and he required no further treatment.

Case 3.—An old clergyman, very liable to sciatica, having been advised to try acupuncture, was in the habit of using daily, previous to dressing himself, two or three needles inserted along the course of the nerve, to enable him to walk down stairs with comfort.

Case 4.—A lady of middle age, suffering so much from lumbago and sciatica, that she could not rise from her chair without assistance, after trying hip baths and mustard poultices in vain, was induced to apply the needles to the most painful parts, when, to her astonish-

ment, the pain was much relieved, and after three applications, was entirely removed.

Case 5.—A lady advanced in pregnancy, similarly affected to the last case, and who had failed in obtaining relief from baths and mustard plasters, used a single needle with complete success, but not without considerable disappointment from the extreme pain produced by the operation. This is the only instance of a complaint of the kind I have met with, as, after the immediate pricking sensation during the passage of the needle through the skin, the feeling is usually like that produced by the strong pressure of the point of the finger on the part.

In none of the above cases was there any constitutional affection, each patient stating that his health was perfect; nor was there any appearance of local inflammation. Indeed my use of acupuncture has always been confined to such cases as the above, as I should not expect that acute rheumatism or neuralgia would be benefited by such means.

In conclusion, I would remark that, though the benefit of acupuncture has been attributed by some writers to a quivering of the affected muscles, which is indicated by a vibratory motion of the needle while inverted, such an appearance has never presented itself in any of my experiments upon myself or others.—*British Med. Journal, Aug.* 28, 1858, *p.* 728.

154.—REMARKS ON THE THEORY OF ELIMINATION IN THE TREATMENT OF DISEASE.

By Dr. C. Handfield Jones, F.R.S., Physician to St. Mary's Hospital.

(Read before the Harveian Society.)

It has been well said by one of the masters of our profession, that the development of a principle is like setting up a brilliant light in the midst of a large hall, which enables the eye to take in the whole in all its fair proportions; while the investigation of details is like exploring the same hall in all parts by the aid of a taper. The latter process is most necessary; without it there can be no safe ascent to higher ground, no sound induction; but yet it ought always to be conducted, as far as possible, under the guidance of some *informing* (shaping) idea, which may connect and colligate our facts, and enable us at last to arrive at a law or principle. I am much inclined to think, that of late years we have been over-busy in accumulating facts without sufficient reference to principles, or, to use Dr. Whewell's term, colligiting ideas. Blood-globules have been counted, tissues have been scrutinized both healthy and morbid, secretions analysed, symptoms described, and râles defined minutely. Far be it from me to decry this painful labour; it has produced fruit, and will, I doubt not, yet more. But have we not, amid all these particulars, thought

too little of the general truths which they contain, and which we ought to strive to educe? I believe strongly that each age has its mission, its more particular work to do; and the mission of our age may be the accumulation of facts, that of a succeeding age their interpretation. But still I would we had more workers after the example of an eminent member of this Society, lately passed away from among us, whose observations and experiments always went straight to a point. I need not say that I allude to Dr. Marshall Hall.

The topic which I wish to bring before the society to-night is the consideration of a principle of wide application in therapeutics; viz., how far, in various diseases I shall refer to, we ought to proceed on the view of endeavouring to eliminate or get rid of some *materies morbi* which we suppose to exist. In many disorders we have more or less certainty of the imbibition of a poisonous material; and it would seem a natural inference, that to get rid of this material should be the chief aim of our efforts. It appears to me that this conception, in a more or less distinct form, is extremely prevalent, and that there is some risk of its being carried too far, and prompting an injurious practice. Thus, Dr. Todd bases his treatment of scarlatinal dropsy on the elimination of the poison. Dr. G. Johnson recommends castor-oil in cholera to procure the excretion of the poison by the bowels, and regards Bright's disease as the result of the renal cells striving to remove morbid materials from the blood, and becoming damaged in so doing. Mr. Simon speaks of cancer as an "eliminative effort"; and Mr. Paget appears to take nearly the same view.

These are high authorities; and I fear I shall be considered guilty of heresy in presuming to differ from them. How far I may be justified, it will be for my audience to decide.

Let me ask attention, first, to one or two introductory remarks. When we meet with a case of poisoning from the ingestion of deadly drugs, such as opium, arsenic, corrosive sublimate, or with a case of snake-bite, we do not think much of trying to expel the poison from the blood, and so relieving the sufferer. We know this would be a vain attempt, and so we set ourselves to counterwork the virus, to stay its deadly action by remedies which have an opposite effect. The snake-bitten man imbibes brandy, arsenic, ammonia, &c., plentifully; and if the poison be not too potent, his system is rallied from the fatal prostration, and he recovers. The animal to which prussic acid or woorara has been administered is apparently lifeless, and if left to itself will soon be really so; but we use artificial respiration for a time, and at length the poisonous influence passes by, and the respiratory muscles resume their play. So also, in a case of opium poisoning, we oppose the tendency to fatal coma by artificial excitement. Here then, are exemplars for us; we see clearly in these cases what course we must follow. We must aid Nature to get over the difficulty; we must not think to take her work out of her hands; but we must try to sustain her powers where they fail. In one instance, indeed, we

can do more, and eliminate the poison by means of drugs. I refer of course, to the detachment of lead from the tissues of the body, and its excretion in the urine, by the agency of iodide of potassium, as first rendered probable by M. Melsens, and recently confirmed by Drs. Parkes and Sieveking. This however, is almost, if not quite, a solitary instance.

Another remark I will offer is this; that it seems of more importance to have a sound, vigorous vitality of the tissues, than that the blood should be of absolute purity. If the life of the solids is feeble and languishing, they can do little, even with the best blood. On the other hand, if they are vigorous, they will nourish themselves and function well, although their nutrient fluid be of inferior quality. Not long ago I had a patient who was markedly jaundiced, but who went about his business, ate and drank as usual, and had no sensation of illness. Another patient has long suffered from Bright's disease, with anasarca, and his urine is still highly albuminous; but for the last six months he has enjoyed exceedingly good health, has been free from dropsy, and looks robust and vigorous. In both these cases (and they are no very uncommon ones) the tissues nourished themselves well out of blood which was far from healthy. Again, with regard to miasmata: a weakly man is exposed to the infection of fever; he imbibes it, and after a time droops and sickens. A companion of stronger frame exposed to the same escapes altogether. What has made the difference in these two? Both must have received the poison into their blood as a matter of physical necessity; but the nervous system of the weaker has succumbed, while that of the stronger has resisted the poison. Or an army is retreating over a line of country pursued by a victorious foe. Both are exposed to the same influences; but the one, dismayed and depressed, is visited heavily by disease, while the other, exulting and confident, is comparatively healthy. Again, if two boat's crews go up the same African river, and are alike exposed to the miasma, while the one is protected by a daily modicum of quinine wine, which is denied to the other, it is notorious that the latter will be to a man smitten with fever, and that the former will almost, if not entirely, escape. The quinine, like the mental stimulus, increases the resisting power of the nervous system: so that the poison received into the blood is inoperative. Once more, when pus is injected into the veins of an animal, the effect depends much on the vigour of its system. A feeble animal—as a rabbit—dies surely; a stronger resists and survives.

I hope that what I have said will not be taken to mean that I consider it of no importance whether the blood be contaminated or not. I am as fully satisfied of the mischief which may ensue on blood-poisoning as the greatest humoralist can be. My only aim is to hold the balance even, and to set forth duly the resisting power of healthy tissues.

Passing on to the proper subject of this communication, let us first

take for our consideration the *exanthemata*—variola, scarlatina, measles, erysipelas. What shall we regard as the true principle of correct treatment in these, so far as we find that we have any power? It is certain that the morbid phenomena depend on the reception of a poison into the system. Can we hope to neutralise or expel this? As to the possibility of neutralising the virus, medical science, we must confess, is wholly silent. As to expelling it, the opinion seems held by many that the exanthem is an eliminative effort, and therefore it would seem that, even if we prefer another channel to that selected by nature, we ought to pursue the same indication. But is it certain that the exanthem, or any other of the morbid phenomena that occur, are eliminative efforts? May we not just as well regard them as reactions of the tissues against the poison, as so many foci of irritation? Doubtless we must not suppress the cutaneous eruption, because it is better to have the skin inflamed than the bronchial or intestinal mucous surface. But neither do we get any good by increasing the eruption as much as possible. Take the case of *small-pox*; the cutaneous is not the only channel by which exudation of the infecting matter takes place. Dr. Copland states "the miasm of small-pox is given out from all the mucous, cutaneous, and excreting surfaces—the exhalations, the secretions, the excretions, the matters in the vesicles and pustules, and the scabs, all contain this poisonous material." Indeed, there is reason to believe that the cutaneous elimination is a very imperfect one. For, examine small-pox pustules (as they are called), and it is evident that they are by no means minute abscesses which break and discharge completely. The exudation, or at any rate much of it, as it dries up into a scab, remains in contact with a most highly vascular, papilloid projection of the cutis, which seems eminently fitted to re-absorb the exuded fluid, and to some extent must certainly do so. The elimination from the pulmonary surface is probably far more complete. While, however, variolous matter is thus exuding everywhere, it is worth notice that neither much sweating, nor purging, nor salivation avail materially to procure a diminution of the morbid action. Sydenham especially regards violent sweats as of bad omen, because "they eliminate particles unfit for secretion", and interfere with the due rate of secretion and expulsion. Whether this is the true reason, whether the variolous poison is not quite ready for expulsion (could it be effected), at an earlier period, may well be doubted, seeing that in the practice of inoculation Dr. Gregory recommends the thin lymph of a fifth-day vesicle in preference to the well-concocted matter of the eighth day. It seems to me highly improbable that the variolous poison is ultimately got rid of solely by expelling the whole of it from the body; it rather appears to be gradually destroyed in the blood, broken up by decomposition, and so changed as to lose its noxious properties. Indeed, if it did not cease to be formed in the blood there could be no end to the disease, except with death; and as during the progress of the disorder fresh blood is

being made out of food, there would be evermore a generation of fresh poison, unless of itself it underwent destruction.

In *scarlatina* and *measles* we have as much certainty of the system having been affected by a poison, as in the case of variola. But is it not really a stretch of imagination to regard the cutaneous eruptions, the faucial, bronchial, and renal inflammations, as in any wise eliminatory acts? Are they in anywise essentially different from ordinary inflammations of the same parts, and is not our successful treatment of them in the main identical in both cases? One of the most eminent physicians of this metropolis, however, seems to regard all these phenomena as of eliminatory character, and shapes his practice in accordance with this view. So also Dr. Copland, in speaking of scarlatina, both as to its prevention and cure, lays principal stress on "such measures as promote the depurating action of the emunctories on the blood." Now my objection to this view, viz., that the elimination of the poison is the one great aim we are to keep before us, is, that it would mislead us in the most perilous cases. In ordinary ones the treatment it suggests will be appropriate enough, and will coincide with what would be recommended on other grounds, but in the more severe and dangerous cases it would manifestly be unsuitable. Thus we should not hope to save a case of malignant scarlet fever by purging out the poison, nor a case of measles with broncho-pneumonic complication of sthenic character by the use of mere diaphoretics. In both kinds of instances we must follow common sense, and the safe old rule "to obviate the tendency to death" in whatever way that manifests itself. If the danger is from sinking and asthenia, then we must uphold; if from violent inflammatory action, we must deplete. Our task is not to get rid of the poison—that Nature will do of herself; but to sustain the system and guide it safely between the opposite perils of excessive irritation and overwhelming depression. The very marked success which has attended the steady use of quinine in Mr. Hood's hands in scarlatina for many years, is scarcely reconcilable with the view of elimination. It is true that he attaches great importance to a daily calomel aperient, but he regards quinine as his sheet anchor.

The last of the exanthemata group, viz., *erysipelas*, assuredly gives but small countenance to the idea of procuring recovery by expelling the poison. All our best experience shews that we must deal with the disease on ordinary principles, viz., if ever (*rara avis* in London at any rate) it be of sthenic character we must employ antiphlogistic means; if, as we almost always meet with it, it be of asthenic character, then we must strive to sustain the sinking powers.

I will here make one remark in passing from this hasty glance at the exanthemata; viz., that there seems much reason to believe that the poisons in them are not separate and distinct substances, which may be thought of as dissolved in the blood, but they are rather states of the blood itself. The whole albuminoid plasma of the blood, and all

its exudations, are thrown into a peculiar state by an agency probably rather catalytic than fermentative. As long as this state lasts, all the emanations and effluvia from the body contain infectious matter; when it is over, the virus has ceased. But this, as before stated, is dependent, not on the poison having been all excreted, but rather upon its being all destroyed, or having ceased to be.

Let us now look to *continued fever*, ignoring for the nonce distinctions of typhus and typhoid. Shall we think to see in the rose spots, or measly rash, in the intestinal glandular deposit, or the congestive pneumonia, eliminatory efforts? If so, much more may we consider the great increase which often takes place in the secretion of urinary solids as an evidence of the same, and indication for treatment. But if we look to the answer which the system gives to our therapeutic efforts, we find a decided condemnation and refusal of all formal evacuative treatment—at least in the fevers which prevail among us at the present day: though some thirty years ago, as high authorities testify, a different proceeding, involving even venesection, was not only borne, but required. Now we have often much ado to sustain the powers of life in its struggle against the depressing influence, and we take away blood even by leeching with some reluctance. The only kind of eliminative treatment that can be advised in fever (and this applies equally to variola and scarlatina) is the free access of pure air, which is certainly of very great importance. This doubtless favours pulmonary exhalation; but yet it can scarcely be considered as directly influencing the excretion of the poison, but rather as preventing the retention of other noxious effluvia in the blood. A mode of treatment which I have employed, with apparently good results, in a few cases, is diametrically opposed to elimination. I have given two or three grains of quinine, with six or eight drops of liquor opii sedativus, about four times a day, administering wine and other support according to need. The intention is not to effect a cure, as Dr. Dundas affirmed he could do, but to prevent local congestion by toning the vaso-motor nerves, and to aid in sustaining the nervous system under the depressing influence. Acknowledging myself an adherent to the views of fever so well expounded by Virchow and Dr. Parkes, and which are doubtless well known to the members of this society, it seems to me a rational proceeding to address remedies of the kind I have mentioned to prop the failing power of those organs, the paralysis of which I believe to be the essential thing in the causation of fever. I am glad to be able to refer to the confirmatory experience of an eminent member of this society, Dr. Fuller, respecting the benefit of quinine in low fever, as I saw it not long ago reported in one of the weekly journals. But many of our profession, if I mistake not, scarcely hold with this. Dr. Watson speaks of the administration of calomel and opium, or hydrargyrum cum cretâ, every six hours, in the early periods of the fever; and such was the common practice that I witnessed in my student days. Now, that some doses of grey and Dover's

powder may not be decidedly useful in subduing a sub-inflammatory condition of the intestinal mucous membrane, I do not at all deny; but I would never give a patient of mine in low fever a particle of mercury on the view of eliminating by the bowels the morbid poison, as a physician of no ordinary attainments and position not long ago affirmed to me he did. The fact that quinine and opium can be given with advantage throughout the course of low fever, is a strong argument of itself that no eliminatory treatment is needful or desirable. Let me not be understood to say that I suppose all fevers would do well under such management as I have just mentioned. I have no doubt that, in other types, a very different procedure would be requisite, as tartar emetic and opium, or even venesection. Everything must depend upon the character of the symptoms, whether they run in the direction of violent inflammatory reaction, or in that of asthenia.

The great family of *malarious* diseases, including fevers, neuralgiæ, dysenteries, &c., are commonly regarded as depending on the reception of a poison into the blood. If this be true, how strong is the lesson they afford us as to the right way of dealing with analogous conditions! We do not attempt to purge out the poison, or evacuate it by skin or kidneys: we simply take no count of it, but brace and tone up the nervous and other systems to resist it. Quinine, arsenic, iron, strychnine, generous diet, good air, cheerful animating occupation,—these are the antidotes to the malarious diseases. Of course, if internal organs are engorged, or torpid in their action, this must be corrected: unhealthy secretions must be improved, otherwise there will be no opportunity for the curative effect of the real remedies. The point, however, for our notice at present is, that these are the very reverse of evacuative.

In *syphilis*, we have, I suppose, an undoubted instance of a poison being received into the circulation, and producing wide-spread morbid effects. Of the *modus operandi* of the two great reputed remedies, mercury and iodide of potassium, we do not know much. Our most certain information respecting the action of the first, points to it as a controller of sthenic inflammatory movement, and an absorber of effused fibrine. Whether it has really any peculiar specific action on the syphilitic poison, at least in adults, is to me, as to many, a matter of some doubt. I see, certainly, that it makes to cease for a time the secondary local affections; but does it really get rid of their exciting cause? The following quotation from Mr. Erasmus Wilson's work justifies this doubt. After more than five pages devoted to the treatment of constitutional syphilis, he proceeds: "We may now suppose the first attack of constitutional fever, or secondary symptoms to have passed away; but it does not therefore follow that the syphilitic poison is entirely banished from the blood; on the contrary, the probability is, that after the lapse of a few months, a second attack will occur, and after that we have a third, a fourth, and even more; the

attacks at last becoming irregular, and putting on a new shape and new characters."

The author just quoted refers the beneficial effects of mercury to its acting as an eliminant, and approves of sweating and diluent drinks as adjuvant means; but I must think that there are strong objections to this view. It is notorious that copious salivation (three or four pounds a day Boerhaave required) or bilious purging are anything but desirable in the mercurial treatment of syphilis; on the contrary, we are especially anxious to obtain the mildest possible perceptible effect, and we stop as quickly as we can any violent action. I incline strongly to think that, when mercury acts beneficially in constitutional syphilis, it is as a blood alterant, decomposing and destroying some abnormal albuminoid matter in the blood. The marked improvement which takes place in the health of diseased children under its use seems quite independent of any noticeable elimination; and altogether consonant to the mode of action I have suggested. Beyond an empiric acquaintance with the action of iodide of potassium, we are quite in obscurity. We find that it effectually arrests certain inflammations of fibrous tissues, syphilitic or rheumatic; notably those of the periosteum; that it is prone to cause irritation of some mucous surfaces; and that it exerts an absorbent action, attended with more or less wasting, if long continued. Dr. Pereira states that diuresis is a common consequence of its use. This I have not observed. I took ten grains in five doses, in about thirty hours, and collected and analysed the whole urine before and after. Five days before taking the iodide, the twenty-four hours' amount was 32 ounces, of specific gravity 1028·5. While I was taking the iodide, the amount was 38·5 ounces, of specific gravity 1020: the urine contained iodine. The urea, the uric acid, the acidity, the chlorine, phosphoric and sulphuric acid, were all diminished by the use of the drug; the urea especially was less by 170 grains. In the case of a man with incomplete paralysis, which I suspected might be due to the poison of lead, and who had been taking 30 grains a day for several days, the twenty-four hours' amount of urine, while under the influence of the iodide, was 50 ounces, of specific gravity 1023; it contained iodine. Six days after omitting the iodide, and having substituted for it strychnia and arnica, the twenty-four hours' amount was 62 ounces, of specific gravity 1013. The urea had increased, and the sulphuric acid; the phosphoric acid had diminished, and the uric acid was 0. The result of these experiments (though far too few to be decisive) scarcely favours the view that iodide of potassium causes increased urinary excretion. But, even if it were proved to be a diuretic, it would be the merest hypothesis that it eliminated syphilitic poison, and we should have to explain how it came to act so differently to other unquestionable diuretics. To my own mind, the essential agency of iodide of potassium, as of mercury, lies in its nullifying inflammatory nisus; but it has a more immediate relation than the latter to syphilitic and rheumatic inflammations. It

appears to me a fact full of significance that a man who has contracted syphilis, and been apparently cured of it, may remain well for a considerable time, till something breaks down his health, and then the symptoms reappear. Does not this show that, while the vitality of the tissues is vigorous, they can tolerate the presence of the poison without injury; but as soon as they are enfeebled, the morbid action recommences? The curious facts observed in the treatment of syphilis by repeated inoculation also point out that the expulsion of the poison is not the sole and only means of obtaining immunity from its injurious influence.

With regard to ordinary *skin-diseases*, I think the belief has been and is very general, that they depend on some *materies morbi* acting as a cause of irritation, which requires to be either neutralised or eliminated. But taking the eruptions which show the greatest tendency to effusion of fluid, such as pemphigus and eczema, do we not certainly find that the best treatment is one which, by toning the vessels of the part affected, arrests the discharge; and that this, which we can often do by arsenic, so far from disordering, improves the general health. What is true of these eruptions is also true in a less degree of most others, always provided that the inflammatory action is not of a sthenic kind, for in that case we must first subdue the tissue-irritation before attempting to tone the vessels. Some of these skin diseases, as they are called, are beautiful illustrations of one most frequent form of diseased action, viz., of that which is essentially dependent on paralysis of the vaso-motor nerves. Roseola for instance, is not uncommon as an effect of summer heat; it is also observed in cholera, and in remittent fever, and chronic aguish disorder. It is not a sign of any poison wanting to escape by the skin, but simply of a paralysis of certain vaso-motor nerves, and consequent flushing of the capillaries. Quinine I have found a very good remedy for it. Or take herpes zoster, with its pearly vesicles grouped so prettily on their pink areas,—is this an eliminative effort? Not so surely, seeing that the eruption is best treated by drying it up as soon as possible, and giving quinine or other tonics freely for the cure of the attendant neuralgia, which is often so severe. Of erythema nodosum, nearly the same may be said. Dr. Watson finds it to yield readily to quinine. Now, if these instances are not of eliminative character, why should we, in the absence of proof, suppose other skin eruptions to be.?

Carbuncles are sometimes imagined, as well as *boils*, to indicate the presence of some morbid matter in the blood; and it is probable enough that the fibrine is an unhealthy state, and prone to deposit. But no mere eliminative treatment is adequate to cure; but it is to tonics and generous diet that we must look chiefly for cure and prevention. Furunculoid deposits are said to be no uncommon results of the hydropathic treatment, which must certainly eliminate powerfully. The particulars of an interesting case have lately been communicated to me by Dr. O'Ferrall, in which a carbuncle, which was extending in

spite of having being incised, was immediately beneficially modified, and soon brought to heal by the application of pressure. Here elimination was out of the question.

The last disease to which I shall allude in the discussion of this subject is *rheumatism*, including the febrile and non-febrile forms. The prevalent theory, that adopted by Drs. Todd and Fuller, is, that undue development of lactic acid in the secondary assimilating processes generates a poison which produces the familiar symptoms. Dr. Copland, on the other hand, locates the primary disorder in the organic nervous and vascular systems, and regards the production of acid rather as the effect than as the cause of the disease. A strong argument in favour of the lactic acid theory, as it appears to me, is the great benefit derived from saturating the system with alkali. No other mode of treatment, at the present day at least, seems to be comparable with this—I mean, of course, in rheumatic fever. Another argument is furnished by the interesting observation of Dr. Richardson, that injection of lactic acid into the peritoneum of animals produces endocardial inflammation. On the other hand, it may well be questioned whether the alkalies act as mere chemical agents, neutralizing and eliminating excessive acid ; and whether their remedial agency is not of a different kind, viz., vitality-modifying, or dynamic. There are testimonies which can scarcely be set aside as to the possibility of treating acute rheumatism advantageously in other and very different ways. Thus, Dr. Watson affirms to have certainly *cured*, not seen recover, patients by the use of colchicum, conium, and calomel with opium. Dr. Corrigan has succeeded well with opium alone. Dr. Sibson, while giving an alkaline drink, administers with advantage from three to twenty grains of opium daily. M. Trousseau, a first-rate authority, states that, after having carefully tried M. Briquet's recommendation of quinine, he has satisfied himself of its happy effect in this disease, and in this conclusion he is supported by M. Legroux. Trousseau, however, thinks that quinine is much more efficacious when the inflammatory nisus has been previously subdued by the administration of calomel in divided doses. Now, be it especially observed, I am not advocating these modes of treatment ; I decidedly give the preference to the alkaline ; but my argument is this, that if these means, and especially the two latter, can cure, then there is much ground for believing that the alkalies do not act beneficially merely in virtue of their chemical quality. It seems to me very probable that they may act solely as tissue-sedatives, tranquillising the action of the heart, and nullifying inflammatory excitement in the parts affected. Certainly, the alkalies may produce a notable eliminative effect. A man to whom I gave half a drachm of bicarbonate of potash four times a day, for four days, passed in twenty-four hours 35 ounces of urine, of specific gravity 1024 ; while, without any medicine, he passed only 18 ounces, of specific gravity 1027. The amount of urea was increased by about 170 grains. On the other hand, in

acute rheumatism, this effect is not uncommonly slow of attainment. A boy, aged 12, suffering with rheumatic fever and slight pericarditis, after nine days of alkaline treatment (a scruple of bicarbonate of potash every two hours) passed in twenty-four hours only 10 ounces, of specific gravity 1034 ; after fifteen days, he passed only twelve ounces, of specific gravity 1035 ; he was now much improved, and all medicine was suspended. Nine days later, no medicine having been taken, and diet being the same, he passed twenty ounces, of specific gravity 1016. He was then quite convalescent. A man, aged 21, suffering with acute rheumatism, a slight endocardial murmur existing, after taking a scruple of bicarbonate of potash every hour for four days, passed in twenty-four hours only 9 ounces of urine, of specific gravity 1025. Five days later, all medicine having been omitted for the last three, he passed 28 ounces, of specific gravity 1022 : he was then much improved. From these and other observations, it seems as if the alkalies acted primarily on the morbid process ; and that, on the subsidence of this, the urine increased in quantity. I think I can be sure of this, that, in spite of the most thorough alkalisation, the urine effervescing strongly with muriatic acid, the phenomena of rheumatism in a subacute degree may persist, scarcely modified.

Against the view of alkalies being useful in febrile rheumatism, by a neutralising and eliminating effect, may be adduced the almost equally marked action of Fowler's solution in the less febrile or apyretic forms. This drug can only act as a toner to the vaso-motor nerves, and so, by contracting the vessels, diminish hyperæmic afflux. In fact, it cures rheumatism on the same principle that it cures eczema, and, *mark*, the non-febrile forms of either. Without committing myself to a decided opinion, I will only observe, that it seems to me still an open question whether the treatment of rheumatism is to be based essentially upon the elimination of some poisonous matter, as lactic acid (which, by the way, may be given a long while without producing rheumatism) ; or whether the disease is rather to be regarded as analogous to catarrh with special articular implication, and is to be treated simply with reference to general principles, nullifying the inflammations and fever in any way that we best may.

I will now state shortly, in the way of propositions, the views I entertain on the subject discussed.

1. In the majority of instances in which we have reason to believe that a morbid matter has entered the blood, and is affecting the system injuriously, it is vain to think of expelling it by any therapeutic efforts. Nature must be left to deal with it as she will, and the only direct aid we can give her in this process is to admit pure air as freely as possible, so as to favour the pulmonary exhalations.

2. We are at the same time to watch carefully for opportunities of *aiding* nature in her conflict. If reaction is excessive, we must endeavour to lessen it ; if prostration threaten, we must support and tone.

If secretions become morbid, they must be corrected; and generally we must be on the look out to discover and meet any requirement that may arise. Often and often our help judiciously given will turn the scale; but, on the other hand, we may do infinite harm by meddling interference. It is a wise saying, "that it often happens to good physicians to find no indications for treatment, to bad ones never."

3. There are several disorders which simulate, so to speak, eliminative actions, but in which the morbid phenomena are capable of a different and better interpretation, and even the presence of a *materies morbi* is very doubtful. These are to be treated by endeavouring to quiet inflammatory nisus, to soothe nervous irritation, and to tone relaxed vessels.—*British Med. Journal, April* 24 *and May* 1, 1858, *pp.* 330, 349.

155.—*Chlorate of Soda as a Substitute for Chlorate of Potash.*—M. Guéneau de Mussy states, in the Revue Médicale, that, struck by the little solubility of chlorate of potash, he substituted chlorate of soda for it, as the latter salt is much more soluble than the former. The taste of the chlorate of soda is, besides, less disagreeable than that of the other salt, and can also be given in a small quantity of vehicle. M. de Mussy has given the chlorate of soda in several cases of diptheria with uniform success.—*Lancet, June* 12, 1858, *p.* 595.

156.—*A Contribution to the Question of Fatty Degeneration of the Heart.*—Dr. H. Weber, Physician to the German Hospital in London, relates the histories of two cases of heart disease, in which, after death, the microscope showed the hearts to have undergone extensive fatty degeneration. The muscular tissue, on analysis and and comparison with two analyses of healthy hearts, proved to contain less fat than the latter, as will be seen by the following numbers:

1. Diseased hearts:

	Left Ventricle.	Right Ventricle.	Septum.
A. Sp. gr. .	1·0478	1·0406	1·0475
Water .	80·159 per ct.	83·279 per ct.	80·815 per ct.
Fat .	2·242 „	1·914 „	2·350 „
B. Sp. gr. .	1·03553	1·03051	1·03064
Water .	81·374 per ct.	82·531 per ct.	82·789 per ct.
Fat .	2·739 „	2·515 „	4·145 „

2. Healthy hearts:

A. Water .	79·381 per ct.	82·027 per ct.	79·306 per ct.
Fat .	3·630 „	3·109 „	3·815 „
B. Water .	79·317 „	81·728 „	—
Fat .	3·216 „	2·818 „	—

Dr. Weber refrains from drawing a positive conclusion from these cases, but suggests that possibly what we term fatty degeneration con-

sists, not so much in the deposition of fat as in the isolation of the fat, normally a constituent of the muscular fibril, owing to the retrograde metamorphosis of the tissues.—*Archiv für Pathol. Anat., and British and Foreign Med.-Chir. Review.*

157.—ON COUNTER-IRRITANTS.

By Dr. Thomas Inman, Liverpool.

There is at the present day a wide-spread doubt respecting the doctrine of counter-irritation generally, and the use of blisters particularly. It is argued, and very justly, that if blisters act simply as derivatives or revulsives, it would be most judicious to apply them at a considerable distance from the diseased spots; and yet, as a general rule, experience proves that their value is in proportion to the nearness of the counter-irritant to the part affected. But still greater doubts are entertained about the doctrine that the supervention of one disease is efficacious in curing another. The inquiry naturally branches into two directions; first, Is this dogma true? secondly, If so, does it explain the *modus operandi* of counter-irritants?

That the dogma is true *to a certain extent*, there can be no reasonable denial. We are many of us familiar with the phenomena of metastasis in disease. We have seen a white swelling of the knee get suddenly well, while the lungs have as suddenly become affected fatally; both phenomena taking place in the same fortnight. Hydrocephalus may be replaced by cervical abscesses. We have seen erysipelas in the foot get well *pari passu* with the invasion of phrenitis; then the erysipelas has reappeared, but in the calf of the leg, the head symptoms getting well; the disease has again left the leg, and invaded the peritoneum; and has again left this to settle over the shin-bone. We have seen recovery from jaundice followed by a cutaneous eruption; gout in the stomach replaced by gout in the toe; swelled testicle may supervene on cessation of gonorrhœal discharge; and suction of the mamma in a woman recently confined will produce uterine contraction; pneumonia will sometimes terminate in some critical discharge; and a monthly hæmoptysis may replace the usual uterine flow. Other instances will occur to many of my readers. But on the contrary, there is abundant proof that the supervention of one disease may occur without any beneficial influence over a preceding one. Thus, ulceration of the bowels will not cure pulmonary consumption; gout in the right will not ameliorate gout in the left foot; diabetes will not cure ascites from diseased liver; injury or traction on the mamma will not produce contraction of the uterus before the normal time for parturition; erysipelas of the skin of the face will not prevent its affecting the brain; sore-throat will not cure syphilitic lepra, nor will an irritant to the urethra cure swelled testicle; pruritus vulvæ is compatible with increasing uterine disease, and nettle-rash with ulcer of the stomach.

Granting then, that there is a limited amount of truth in the dogma, we ask if it can explain the *modus operandi* of counter-irritants? Does it explain why a blister will increase an acute disease, and cure a chronic one? Why a blister to the side in chronic pleurisy will do more good than a brisk cathartic, *i. e.*, a blister to the bowels? Why a blister to the head in typhoid coma will rouse a patient who was utterly insensible to the presence of a bed-sore? And lastly, if the doctrine be true, ought it not to lead us to use counter-irritants in every disease, no matter what its nature?—a plan the absurdity of which none of us could fail to see.

There being then, grave reasons for considering the ordinary doctrines respecting counter-irritants to be untenable, it becomes necessary to inquire whether their operation may not be explained in some other way. The present doctrine is mysterious, and makes great demands upon our medical faith, or rather credulity. In seeking another, we must carefully follow the dictates of observation, analogy, reason, and experience.

I propose to commence by a consideration of the action of certain agents when applied to the skin. We shall then be in a position to deduce some law or principle of action applicable to counter-irritants generally, and to show the practical superiority of the new doctrine over the old.

As my space is necessarily limited, I must abstain from long dissertations upon separate facts, and must be content with giving the results of experiments, rather than detail them at length.

Without further preface then, we inquire what is the action of well known agents when applied to the skin? We begin with arsenic, whose presence can be so well detected by the chemist. Experience tells us that in the form of arsenical paste, it produces a deep slough of the part to which it is applied; and that, notwithstanding the influence it has upon the tissue, it is absorbed, and passes into the system generally, sometimes in a fatally poisonous quantity. In these cases, the action is most intense in the immediate vicinity of the application, but is severe elsewhere. In other cases, where a smaller quantity is employed, its influence is felt only in the immediate vicinity of the part. Thus Taylor relates a case of a man who accidentally used some arsenical ointment to his anus for piles; next day, both the anus and scrotum were inflamed, many pustules were formed, and the matter contained arsenious acid. Pereira relates another, where a woman used an arsenical ointment to the scalp. It produced great swelling of the head; and in about six or seven days, enlargement of the ears, and of the glands of the jaw and neck. The face was in a sort of erysipelatous inflammation; and, in addition, there were vertigo, fainting, vomiting, ardor urinæ, &c. In a few days more, the hands and feet were covered with pimples, but she recovered ultimately. Here then, we have distinct proof of an irritant being absorbed, and operating *principally* in the vicinity of the original application, and

more moderately elsewhere. We see another illustration of the same fact in those cases where local palsy arises from local contact with lead, without there being any other distinct sign of the operation of the poison on the system.

Taylor records cases where bichloride of mercury, topically applied, has produced violent local symptoms in the first place, and severe intestinal disease in the second. Pereira gives others where the nitrate of mercury, used locally as a caustic, has been absorbed, with fatal effects on the alimentary canal. Tartar emetic, in the same way, when applied to the skin, produced first a local effect; but, in some few instances, it produces a secondary effect, such as nausea and vomiting.

We do not however, confine our observations to caustics and irritants: we may refer to milder remedies, which, when applied to the skin, have firstly a definite action on the neighbouring parts, and secondly on the system generally.

Dr. Ward of Manchester, in 1809, called attention to the ease with which opium might be introduced into the system, and produce its characteristic effects by means of friction on the skin. I have myself had much experience of laudanum and morphia epithems; and have repeatedly noticed, first a local, subsequently a general effect. The late Mr. Shaw of Cheltenham was in the habit of treating sciatica by the application of a plaster composed of opium, belladonna, colchicum, and resin, to the whole of the lower extremity; and he invariably found that it relieved the local pain in the first place, and affected the system in the second. Applied near the eye, belladonna produces a local effect only, as the absorbing surface is small, and the part soon dries; but when applied to the os uteri on a larger surface, and kept constantly moist, constitutional effects often follow the local ones.

I next pass on to a substance which we can trace by the eye—nitrate of silver. I know a gentleman whose face has been rendered of a blue or slate colour by the continued application of very strong argentine solutions to the fauces: the hands do not partake of the same tint. There can be no doubt of the facility with which mercury may be introduced into the system through the skin, as inunction is habitually resorted to whenever a very rapid salivation is required.

I have adverted to instances in which the action of lead, locally applied, has been manifested by local palsy, without any general effect upon the system. There are many others in which its cutaneous absorption has been followed by general effects.

From these facts, I consider that we may enunciate the following law: *any material capable of being absorbed through the skin acts primarily and most energetically on the spot to which it is applied, and on the parts in its vicinity; and secondly, and more mildly, on the system generally.*

I will next inquire whether the most popular counter-irritants form any exception to it. I will begin with cantharidine. There is abundant proof of its local vesicating powers. There is tolerably good

proof also that it is absorbed, and produces irritating effects on the neighbouring tissues. Thus we learn from experiment that blisters applied to the thorax and abdomen of dogs and rabbits will produce redness and absolute inflammation of the pleura and peritoneum, in patches distinctly corresponding to the vesicated surface of the skin. My friend Dr. Cameron has seen, after death, vascularity of the pleura in men, corresponding with blisters applied to the side a short time before death. He has met with cases in which a friction-sound has followed their application to the thorax within twenty-four hours after their use, no such sound having been audible before. I myself know an individual in whom the use of a blister is always followed by crops of boils, which begin in the neighbourhood of the vesication, and spread far and wide. Pereira has seen eczema and ecthyma from a similar cause. Sometimes the absorbed vesicant produces extensive inflammation and gangrene of the skin—an occurrence most common in children and other delicate persons, in whom the skin is thin, and cutaneous absorption active. Of the ultimate absorption of the cantharidine into the system, and its influence on the kidneys, I need not speak, as the facts are more or less familiar to us all.

Croton oil, like cantharides, has a local and a general effect, producing in the first place cutaneous inflammation, and in the second free purgation. In like manner, iodine paint has a direct local action on the part to which it is applied; and its presence may subsequently be detected in the urine, as I have ascertained by direct experiments carried on by Mr. Davies, our junior house-surgeon. The same may be said of turpentine epithems: the material is absorbed, and acts directly upon the parts below (as on the intestines, when it is applied to the abdomen for meteorismus), and subsequently may be found in the breath and urine. Ammonia operates in the same way; mustard we cannot well trace, though there is no doubt of its absorption.

From these considerations, we infer—1. That the counter-irritants commonly in use are *direct irritants to the part to which they are applied;* 2. That their acrid principle is absorbed, and acts in the milder form of a *stimulant in the immediate neighbourhood of its introduction;* and, 3. That at last it enters the circulation, and affects distant organs.

To make our meaning clear, let us take nitrate of silver for an example. When rubbed for a long period on the well wetted skin, it produces a slough; when used more sparingly, as in erysipelas, it acts primarily as a *vesicant;* but a portion of it is absorbed and diluted by the cutaneous fluids; and the inflamed skin is permeated by a material analogous, say, to a five or ten grain solution of the caustic.

By this it will be seen that we attribute the effects produced by the counter-irritants *to the amount and influence of the material absorbed, and not to the vesication,* &c., which they cause on the surface of the body. We infer that, if the irritant absorbed meet with a recently or acutely inflamed tissue, it will increase the mischief: while, on the

other hand, that, if it meet with a tissue in a state of atonic inflammation, it will do good.

I believe that counter-irritants operate on deep-seated parts, in the same way as stimulating lotions, &c., do upon superficial parts. Thus, where the vessels of the face are in a state of active inflammation, as *eczema faciei*, a weak solution of the bichloride of mercury will aggravate the evil greatly; but where the vessels are in state of passive congestion, as in chilblain, the same solution is of signal service. In a healthy eye, the daily use of vinum opii, or other irritant, would produce inflammation. In the same eye, in the early stage of ophthalmia, it would increase the mischief; while at a later stage the surgeon would use it, with full confidence of success, to bring back the organ to its original condition. Again, we know that, if we use a blister to an acute bubo, we increase the intensity of the inflammation; whereas the same remedy applied to one in a chronic condition will effect, in many instances, its speedy cure. The same may be said of iodine paint.

If we turn to surgical authorities for their experience of inflammatory affections near the surface, we read similar observations. Is the knee-joint *acutely* inflamed?—blisters are said to be "inadmissible." Is the disease *chronic?*—we then read, "Blisters are as serviceable in the chronic as they are detrimental in the acute disease."

Other examples might be cited, drawn from experience in such diseases as gonorrhœa, eczema, ecthyma, gout, abscess, ulcer, and the like; but I think it scarcely necessary now a-days to adduce much evidence to prove that the stimulation which is prejudicial in the early stage of inflammation may be, and generally is, of the greatest service in the latter stage; and that is equally true, whether the stimulant be directly applied by the hand of the surgeon, or indirectly *by cutaneous absorption*, or other introduction into the blood.

Let us now run rapidly over a few diseases in which blisters are empirically employed, and endeavour to see whether these remarks are applicable to them.

1. Blisters near the eye do harm in the acute stages of iritis, ophthalmia, and sclerotitis. They do good occasionally in the later stages, when the disease is chronic.

2. Blisters to the throat are almost invariably prejudicial in the early stages of croup.

3. Blisters do harm in the early stages of pleurisy, pneumonia, and pericarditis. They do good in the later stages—at that period, in fact, in which, could we use direct means, we should employ a solution of sulphate of zinc or of nitrate of silver to the inflamed surface.

4. Blisters occasionally do good in bronchitis. When they do, the advantage gained is not immediate; it rarely begins until twenty-four hours after the blister has risen, and when the cantharidine has had ample time for absorption and for circulation through the blood-vessels. This

view of the action of blisters in bronchitis is borne out by the advantage derived occasionally in that complaint by the internal administration of turpentine, balsams, warm gums, essential oils, arsenic, and iodide of potassium, and other drugs, which permeate the system, and have locally stimulating effects. A blister will do as much harm in bronchitis in the early stage, as will alcohol, copaiba, and myrrh; and as much good in the later, as will wine, ammoniacum, ammonia, and polygala.

5. Blisters are positively injurious in peritonitis, and in all its stages; we have seen that they will actually produce the disease in dogs and rabbits.

6. They are equally injurious in recent gonorrhœa and orchitis. They are very serviceable in chronic clap and swelled testicle.

7. Blisters to the sacrum, and copaiba internally, have a very beneficial influence upon leucorrhœa.

8. Blisters to the head have a decidedly stimulating effect on the brain in the coma attending typhus or hydrocephalus.

In other words, blisters are prejudicial when the absorption of their cantharidine or stimulating principle brings it into contact with an actively inflamed tissue. They do good whenever that principle meets with an organ in a state of chronic inflammation, such as would be treated by direct stimulation, were it on the surface of the skin.

I pass by as hypothetical, and foreign to our subject, the influence of blisters in relieving simple pain, and in removing serous accumulations from the pleura or pericardium, merely observing that, if the doctrine ordinarily held respecting the power of blisters in promoting serous absorption were correct, blisters ought to be more useful in ascites and hydrocele than in any other disease—complaints in which the distance between the affected membranes and the blister is as small as it is possible in the nature of things to be. I may, however, remark, in passing, that hydrocele in young children is occasionally cured by stimulating applications to the skin of the scrotum, through which they are doubtless absorbed.

If there be any real foundation for the foregoing conclusions, we ought to be able to apply them to other counter-irritants besides blisters. Let us give to each a few words. Boiling water vesicates the skin readily, but experience proves it, as a general rule, void of therapeutic power. Why? Because its influence is confined entirely to the spot to which it is applied. The actual cautery rarely if ever does good, unless where it is used for diseases which have their seat so near the surface of the body that the stimulating effect of the heat reaches them readily. Whenever the diseased portions are deep-seated, it is a matter of great doubt whether the actual cautery is of any more use than an issue or seton would be; and that, to say the least, is very problematical. The potential cautery, or caustic issue, is on the whole preferred to the actual cautery, or to the use of a seton. We explain this by supposing that a large portion of the caustic is

absorbed, and acts as a direct stimulant to a greater depth than either of the other two forms of counter-irritation.

Mustard plasters are by many used instead of blisters, and they have somewhat similar effects.

Turpentine is an especial favourite in tympanitis. It is applied extensively to the distended abdomen in fever and other affections, and generally with success. Why? Because it is absorbed through the skin, and acts as a local stimulant upon the atonic bowels, without producing at the same time distressing cutaneous soreness, or without disordering the stomach, as it is apt to do when administered by the mouth. Its prolonged use produces purging. Iodine, in its various forms, is a counter-irritant of great efficacy, and is useful in direct proportion to the nearness with which it can be applied to the diseased parts. It is especially serviceable in enlarged bursæ and ganglia, in buboes, in nodes, and in rheumatic affections of the knee, ankle, and wrist-joints. Of its absorption there can be no doubt. Equally certain is it that its valuable properties are independent of its producing vesication. Ammoniacal, terebinthinate, crotonic, or other stimulating embrocations, liniments, or ointments, are only serviceable where there is a sluggish or atonic condition in the circulation in the parts below those to which they are applied. Thus, in acute gout, "linimentum ammoniæ" and friction is intolerably painful; yet, when the gout is chronic, they are not only serviceable, but pleasant. So in rheumatic pains, where the joints are hot and burning, no such liniments can be borne; and yet, where the joints are cold and the circulation very languid, their stimulating property gives great relief. This explanation receives corroboration in the fact that the patient experiences in the latter part of his complaint as much relief from internal warmth and stimulation as from external.

From this point a very interesting branch of inquiry springs, which well deserves attention. If it be true that the influence of counter-irritants depends upon the absorption of the stimulating material, and its direct action on the parts below, it follows that an introduction of the same material into the system by the mouth would have a corresponding effect, provided it could be used *in such quantities that the amount so introduced into the affected part would equal that introduced by direct absorption.* We have shown that such is really the case in bronchitis, where certain stimulants taken by the mouth are equal in value to that absorbed from a blister. There are, however, very few other instances in which it is possible to introduce by the mouth the required local quantity, on account of the immediate operation of the irritant upon the stomach; but we constantly find medicines used internally whose action corresponds to the counter-irritants used externally. Thus, while the surgeon vesicates the penis externally for the cure of gleet, he gives cubebs, copaiba, &c., internally; while he applies iodine paint to a diseased joint, he gives the same remedy by the mouth; while he employs turpentine epithems to the abdomen

for tympanitis, he uses it internally as an enema, and gives at the same time some more palatable essential oil by the mouth. We apply a blister for chronic pleurisy, and with it as strong a dose as possible of iodide of potassium, of whose stimulating properties no one who has noticed its influence on the nostrils can have any doubt.

Again, if it be true that chronic inflammations are benefited by the action of stimulants absorbed through the skin, we ought to find a similar principle carried out in other circumstances. Practically, we do so. We find that iodide of potassium, when taken internally to excess, produces a condition in the mucous membrane and in the skin allied to inflammation: in other words, it produces a stimulating effect. As a stimulant, we find it doing good in secondary syphilis, when the symptoms are characterised by great debility, ulceration, &c. It is equally useful in skin diseases accompanied by want of tone; and, on the other hand, it is prejudicial whenever there is an acute or recent inflammatory condition present. Arsenic, another local stimulant capable of absorption, and whose presence may be demonstrated in every part of the body after a few doses have been taken, acts much in the same way as the iodide of potassium. Copaiba and the turpentines generally are used on the same principle in bronchitis and gonorrhœa; the stimulating portion being absorbed, and acting locally on every part of the body, including that diseased.

In like manner, cantharides has been given internally for such diseases as would be treated with stimulating lotions, were they seated near the surface; as, for example, catarrh of the bladder, and seminal impotence from deficient secretion.

The next point to which we must turn our attention is the *duration* of the good effected by a blister when a definitively good result follows.

Those who have much experience with external inflammations, such as ophthalmia, tonsillitis, gonorrhœa, and ulcers generally, are fully alive to the fact that the application of a stimulant once only is not sufficient for a cure. They can see day by day the enlarged vessels or thickened membrane reduce in size, as long as the daily stimulant is used; but when this is suspended, the progress towards health is often suspended too. Vinum opii has daily to be used to the eye, turpentine to the abdomen, zinc or other solution to the urethra, and gargles to the throat. Each application does good, but no individual one effects the cure. This is not, however, universally true; for we do find occasionally that one single application of a powerful stimulant suffices to bring back the vessels to a healthy state. Now, is not this precisely what occurs when the stimulation is applied to internal organs by the medium of cutaneous absorption? It is, I believe, a well established fact, that, in chronic inflammation of the knee-joint, a *series* of blisters are as useful as are a *series* of dressings to an ulcerated leg: each successive one does good, but none positively cures. It is the same in chronic pleurisy, gleet, or gonorrhœa. The same may

be said of the use of repeated vesication in consumption. Each blister is of service, but one is supplemental to another. At the same time, it is to be observed that, after one stimulation by a blister, the diseased parts may commence a change which will continue until it reaches health, just as one single injection into a hydrocele will frequently eventuate in a radical cure, though many such injections are occasionally needed.

But blisters are exceedingly sore and painful applications, producing far more lasting inconvenience than the simple application of caustic to an ulcer; and they consequently have a limit to their utility, that limit being the patient's endurance. We are too apt to reason thus: "I have used a blister once, and it seemed to do good; but the patient was soon afterwards almost as bad as ever, and therefore I will not try another." We do not, however, argue thus when we dress a sore with unguentum resinæ, or apply zinc solution to an inflamed eye; and yet the cases are strictly parallel. The parallelism of the two being assumed, let us try whether we can extract therefrom a rule of guidance. If we ourselves had an ulcer, every application to which was followed by severe pain and inconvenience for a period of at least three days, and yet produced only a temporary good, should we pertinaciously continue to apply the dressing, or should we endeavour to effect a cure by other and less severe means? For my part, I should prefer the milder plan.

And if blisters, to effect a cure of some internal inflammation or the like, demand a frequent repetition, ought we not to judge in a similar way? Should we not prefer to use milder remedies before going to those of greater severity? If so, a blister, instead of being the first, will be one of the last of the shafts fired by the doctor; he will exhaust his other remedial armoury ere he has recourse to vesication, instead of resorting to the former only when he has lost confidence in the latter.

If the views we have been endeavouring to enunciate are true, corollaries of great practical importance may be drawn from them. If it be true that counter-irritants or blisters act as direct local stimulants in internal inflammations, and are beneficial only when those inflammations are asthenic or chronic, and if it be true (as experience shows) that such inflammations, &c., on the surface of the body, are rendered worse by low diet and depressing remedies, while they are improved by generous diet and tonic medicines, are we not driven to the conclusion *that the use of counter-irritants is incompatible with the antiphlogistic regimen; and that to use a blister externally, without a judiciously stimulating plan internally, is contrary to sound, rational, and philosophic medicine?*

What is true of blisters is equally true of their older brothers, caustics (when used to form issues); and of their younger ones, rubefacients; but, as I have already trespassed long enough upon your time, I forbear to pursue the subject farther.

In conclusion, let me recapitulate the points I have endeavoured to bring before your notice.

1. That there is no essential difference, except in degree, between the action of caustics and counter-irritants generally, when applied to the unbroken skin.

2. That these substances act intensely upon the part to which they are applied; more gently, but yet severely, upon the parts below and around it; and more mildly, yet still decidedly, upon the whole system.

3. That blisters, &c., are only useful in those cases in which stimulants would be locally applied by the surgeon, if the parts diseased were on the surface of the body, or within reach of his hand.

4. That blisters, &c., are not essentially different in their *modus operandi* from such stimulants as iodide of potassium, arsenic, copaiba, the warm balsams, essential oils, resins, &c., except in degree.

5. That blisters are useful (in appropriate chronic cases) in proportion to the nearness of the diseased organ to the blistered surface.

6. That, as a general rule, blisters have only a temporary influence; and that, where they are really necessary and useful, they require to be repeated.

7. That the application of a vesicating irritant or stimulating material externally involves the idea of there being local or systemic debility in the sufferer, to correct which such stimulant is applied.

8. That counter-irritants of all kinds are physiologically incompatible with low diet, antimonials, purgatives, or other depressing remedies, inasmuch as it is manifestly absurd to stimulate locally, and yet depress generally.

Startling as these views may appear to many, I believe that they will be found more trustworthy than the older doctrines which referred the curative value of derivatives, revulsives, cauteries, issues, irritants, rubefacients, and the like, to the power they possessed of producing cutaneous change. The fundamental point of such doctrine was, that the supervention of one diseased action prevented the continuance of another. This dogma was the father of homœopathy; notwithstanding which, we still respect it as if it were founded on the everlasting hills of truth. It is high time to cast it away, as being devoid of truth, and contradicted by daily experience.

We are now engaged in a great controversy with medical heresies, and it behoves us, like wary warriors, to examine our banners and prove our weapons ere we enter the lists; nor can I help believing that our success will be triumphant or otherwise, according to the soundness of the materials in our armoury.—*British Med. Journal, July* 24, 1858, *p.* 599.

158.—ON THE CAUSE OF THE COAGULATION OF THE BLOOD.

By Dr. Benjamin W. Richardson, Physician to the Royal Infirmary for Diseases of the Chest, Lecturer on Physiology, &c. at the Grosvenor-place School of Medicine, &c.

It is a well-established fact that coagulation is retarded by a reduction of temperature, and that it may be altogether prevented for a time (as John Hunter, we believe, was the first to show) by freezing the blood, which yet coagulates when thawed and exposed to an atmosphere of ordinary warmth. Conversely, the process is quickened by an elevation of temperature, above the natural standard, towards the point at which albumen coagulates. And thus if, of two samples of blood taken at the same time from the same animal, one be warmed and the other cooled, there will be a marked difference in their periods of coagulation, the interval depending upon the amount of difference of their respective temperatures.

Again, it has been conclusively shown that the more freely blood is exposed to the air, the more rapidly does it coagulate; so that the clot is formed more speedily when the blood is drawn into a wide shallow vessel, than when it is received into a narrow deep one. Coagulation is also quickened by diminution of the pressure of the air, taking place most rapidly in a vacuum. Conversely, coagulation is retarded, sometimes for a lengthened period, by exclusion of the blood from the air, whether in the blood-vessels of the animal body, or in an inorganic receptacle; and, as Dr. Richardson has shown for the first time, the retardation may be sustained *ad libitum* by adding pressure to exclusion. Thus, having laid bare the external jugular of a cat, and placed an inch of it between two ligatures, he removed the ligatured part, and immersed it in mercury beneath the pressure of a column about thirty inches high. After having been left there for twenty hours, the piece of vein was withdrawn, placed in a spoon, and punctured; its contained blood flowed out entirely fluid, and on its exposure to the air coagulated firmly in four minutes. Some blood of this same animal, derived from the jugular vein at the time of operation, coagulated on exposure to the air in two minutes and a half.

Further, coagulation is materially retarded by the admixture of blood with fluids at or above its own density, and also by addition of water in excess; the addition of water to blood, however, in the proportion of equal parts of each liquid, does not materially influence the period of coagulation, unless the temperature of the water added be raised to that of the blood, in which case the coagulation is accelerated.

Lastly, agitation of blood that is freely exposed to the air, has a very decided influence in quickening coagulation. Yet motion *per se* has no such influence; for if the blood be shut up in a closed vessel, motion rather retards than accelerates its coagulation. Dr. Richardson has devised an ingenious apparatus for imitating the natural circulation

in some degree, by keeping the blood in movement within a circuit of tubes composed of inorganic materials, and closed as completely as possible; and he has found that blood may be kept in motion in such a circuit for a brief period without coagulating, but that ultimately the fibrin is deposited on the expanded parts of the circuit.

The foregoing conditions, as our author justly observes, are all in perfect accord with the hypothesis that coagulation is immediately dependent on the escape of a volatile agent from the blood; whilst, in the presence of any other view, these phenomena are not merely disjointed, but even appear contradictory. With a view of putting this hypothesis to the test, Dr. Richardson devised the following ingenious experiment. A large Woolf's bottle was connected by bent tubes with two small bottles; the apparatus being so arranged that a stream of air from a small pair of bellows should first pass through an ounce of blood in one of the small bottles, then through two pounds of blood in the large bottle, and lastly through another ounce of blood in the second small bottle. The three bottles having been charged with blood obtained at one gush from the throat of an ox, the difference in the rate of coagulation of their contents was very striking. The blood through which air was first passed coagulated in two minutes; that in the large bottle coagulated in three minutes; whilst the blood in the third bottle, which received the vapour from the whole mass of the contents of the second, retained its colour and its full fluidity for eight minutes and a half. In another experiment of the same kind, it was observed that the lower stratum of blood in the third bottle coagulated rapidly and became dark, while all above remained of a bright colour and fluid; and it was found on examination that the tube which conducted the blood-vapour from the large bottle was not pushed down far enough, so that the lower stratum of blood was not subjected to its influence.

That the volatile agent on the escape of which the coagulation of the fibrin immediately depends, is ammonia, seems to have been suggested to Dr. Richardson by the well-known power which the fixed alkalies possess of keeping fibrin in solution. On this point he has made a large number of experiments; and he has shown that the discrepancy of the results obtained by others is probably to be attributed to a want of purity in the reagents employed, as in the following striking example:—

"Being anxious to ascertain the effect of nitrate of potass on freshly extracted fibrin, I obtained two specimens of this salt from two different chemical establishments. Both specimens were warranted as carefully prepared. With each of these specimens I made a solution in the proportion of ten grains of the salt to one ounce of distilled water. Into each solution I dropped two grains of moist fibrin, derived from the same blood, and left them standing side by side under the same conditions. In three days, I found that the fibrin in one of the solutions was in a great measure dissolved; in the other it

remained unchanged. This difference arose from the fact that the salt which had dissolved the fibrin contained free potassa; the other salt did not." (p. 50.)

Dr. Richardson states, as the result of his experiments on this point, that for holding blood permanently fluid, the proportion of either of the fixed alkalies must not be less than one grain to the fluid ounce, or one part in five hundred and five by weight; and that no normal blood-salt has the power of effecting the solution of fibrin, nor yet of holding blood fluid, except when added in proportions which would be incompatible with life if introduced into the circulation. Hence it becomes obvious that as the fluidity of the blood in the vessels cannot be attributed to the presence of the fixed alkalies, since these are equally present in blood which is undergoing coagulation, if the presence of an alkali has any concern with it, this must be the volatile alkali, ammonia: and under the guidance of this clue, Dr. Richardson has made a large number of experiments, to determine, in the first place, whether ammonia is given off from blood during its coagulation: secondly, whether by the retention of ammonia in the blood its fluidity may be preserved; and thirdly, whether a coagulum of fibrin already formed can be redissolved by the addition of ammonia, to be re-formed when the ammonia is allowed to escape.

That ammonia is evolved from blood on its being withdrawn from the vessels and exposed to the air, has been proved most satisfactorily by Dr. Richardson's experiments, which have been so multiplied and varied as to exclude all sources of fallacy. The test is a very simple one; being the formation of minute crystals of chloride of ammonium on a slip of glass previously moistened with hydrochloric acid and exposed to blood-vapour. For the precautions which must be taken in order that this test may be applied with a satisfactory result, we must refer to Dr. Richardson's own pages. It is worthy of being specially noticed, that the evolution of ammonia does not cease with the act of coagulation, unless the clot be exposed to a temperature at or below 32° Fahr., when all gaseous evolution ceases, and also the further act of separation into clot and serum. If, on the other hand, a recently formed clot be divided into small pieces, and be placed in a vessel surrounded with water at 100° Fahr., there is a rapid separation of serum and a continued evolution of vapour; the subsequent contraction of the clot being but an extension of the first act of coagulation. Thus, then, the fact of the evolution of ammonia from freshly-drawn blood is incontestably established; but the quantity evolved is extremely minute; and this phenomenon, like the evolution of carbonic acid, might reasonably be regarded as a mere coincidence, if its special relation to the act of coagulation could not be proved in any other way.

It appears however from Dr. Richardson's next series of experiments, that the introduction of a small quantity of ammonia into blood whilst yet liquid, has the effect of retarding its coagulation for a period

proportional to the amount; and that the like effect is produced by the transmission of air charged with ammonia vapour through blood. Thus, when four one-thousand-grain bottles, into which respectively one grain, one half-grain, one-third grain, and one-fourth grain of ammonia had been previously introduced, were filled with blood drawn from the same animal, the blood in the first was fluid three hours afterwards, that in the second coagulated feebly at the end of thirty-five minutes, that in the third remained fluid for twelve minutes and then coagulated, whilst that in the fourth coagulated in three minutes; another sample of the same blood coagulated firmly in one minute on simple exposure to air at sixty degrees Fahr. By means of an apparatus specially contrived for the purpose, Dr. Richardson drove air charged with three grains of ammonia-vapour through five hundred grains of blood; the blood remained fluid during the twelve minutes that this process lasted. Half the blood being then set aside in an evaporating dish at rest, half an hour was required for its coagulation; through the other half a current of air was driven, and it coagulated in three minutes. The blood of the animal used in this experiment coagulated naturally in four minutes at a temperature of fifty degrees. The solvent effect of ammonia upon fibrin had been observed by Dr. Richardson some years previously, in the course of some inquiries which he made with a view to determine the most likely means of preventing the formation of fibrinous concretions in the heart during life. Ten-grain masses of moist fibrin being placed in solutions of ammonia of the respective strengths of five grains, two and a-half grains, and two grains, to one thousand grains of water, their solution was accomplished in fifteen, seventeen, and twenty-one days respectively. In another experiment, a similar quantity of fibrin was divided into small pieces, which were placed in a mixture of twenty minims of strong liquor ammoniæ with two ounces of water: the fibrin soon began to gelatinize, and in five days had entirely disappeared, forming a sticky solution, which evolved ammonia freely. This solution was kept by Dr. Richardson nearly four years, closed up in its bottle, during which time it seemed to undergo no change. It does not seem to have occurred to him, however, to try whether, on freely exposing it to the air so as to allow the ammonia to escape, its redissolved fibrin would again coagulate.

That after the solvent action of ammonia has been exerted on the coagulum of blood, so that fluidity has been completely restored, a re-coagulation will take place when the escape of ammonia is permitted, is the result of another series of Dr. Richardson's experiments; the conditions of which were so varied as to justify his statement that "in blood held temporarily fluid by excess of ammonia, coagulation is favoured or retarded by the same physical agents as those which favour the normal coagulation of blood."

The conclusion drawn by Dr. Richardson from the series of facts of which the foregoing are samples,—namely, that the fibrin of the cir-

culating blood is held in solution by ammonia, and that on the escape of this volatile solvent from newly-drawn and liberated blood the passage of the fibrin from the fluid to the solid condition immediately depends,—seems to us to be entitled to take rank as a well-supported theory, if not to be at once admitted as a demonstrated doctrine. We are not inclined to attach much weight to the objection which we have heard raised against it, that the liberation of ammonia from the whole mass of coagulating blood could scarcely take place in so brief a period; for it is well known that ammonia may be transmitted through aqueous liquids with extraordinary rapidity; and (as already shown) although the escape of ammonia commences almost immediately that the blood is drawn, it really continues for some time afterwards. The objection seems early to have occurred to Dr. Richardson himself; and he remarks that his doubt was dispelled by the constancy of the relation between the rapidity of the evolution of ammonia, and the rapidity of coagulation. Thus in sheep's blood which coagulates rapidly, the indication of its liberation afforded by the formation of crystals is as marked in one minute, as it is in the case of the blood of the ox, which coagulates slowly, after three or four minutes. And the chemical condition of rapid evolution seems to be supplied by the fact, that the blood is rendered feebly alkaline by the presence of a quantity of fixed alkali or alkaline carbonate, which is not sufficient to hold the fibrin in solution, but serves to expel the ammonia (especially with the aid of gentle warmth) when the blood is exposed to air or to a vacuum. Dr. Richardson has endeavoured to ascertain by experiment the proportion of ammonia which will be required to maintain the fluidity of circulating blood; and he has come to the approximate conclusion that the maximum would be one part of the alkali to sixteen of fibrin, or one part of the alkali to eight thousand of blood containing two per cent. of fibrin. The proportion, he remarks, may be less, but need not be more. Considering how very imperfectly the natural condition of the circulating blood can be imitated by any artificial arrangements, we are inclined to think that the actual proportion of ammonia in the blood of the living body is considerably below this estimate.

It is an important corroborative fact, as indicating the normal presence of free ammonia in the circulating blood, that the volatile alkali is ordinarily given off in the act of expiration. This was first noticed about fifteen years ago, by the Rev. J. B. Reade; who detected microscopic crystals of chloride of ammonium on a slip of glass, previously moistened with hydrochloric acid, which had been exposed to the expiratory blast. MM. Viale and Latini, in 1854, arrived at the same conclusion, by a series of independent labours; and Dr. Reuling published a paper in the same year, in which he affirms that ammonia is contained in the expired breath of every one, though ordinarily to no greater amount than in the atmosphere, but that it is in large excess in the breath of patients suffering under typhus, pyæmia, and uræmia.

Dr. Richardson states that he has made upwards of a thousand experiments on this point, on animals of various kinds, as well as on human beings of both sexes, and under varying conditions as regards temperature of body, time of day, repose and fatigue, health and disease. He has found the test of the formation of microscopic crystals more satisfactory than any other; and he applies it by means of the following simple apparatus:—A slip of glass is secured by india-rubber bands across the trumpet-shaped orifice of a straight breast pump, into the bulb of which a drop or two of pure hydrochloric acid has been introduced; the subject of the experiment having been made to expire through the small end of the tube, the air passes through the acid vapour, and whilst part of the alkali is fixed in the bulb, another portion goes on to be condensed on the slip of glass. Dr. Richardson has found the exhalation of ammonia to be the general fact, though not without exception; and he has proved that the alkali is really thrown off from the body, and not merely returned from the air inspired, by testing the air which was being breathed,—driving it through the same apparatus for a time equal to that consumed in the respiratory acts, without the formation of any crystals of chloride of ammonium. The most marked and constant exception presented itself in the case of a gentleman who lived entirely on vegetable food and abstained from alcoholic drinks; no trace of ammonia being detectable under any circumstances in his breath. But Dr. Richardson states that he sometimes found his own breath free from it on rising in the morning after a sound night's rest, and that the quantity was very much reduced in cold weather; whilst, conversely, a state of fatigue and a high temperature are accompanied by an augmented evolution. In a case of simple anæmia, he could not obtain the slightest evidence of the presence of ammonia; whilst an excess presented itself in a considerable variety of other diseases. It has been found by Mr. Blake that when ammonia is artificially introduced into the blood, it is so rapidly removed by pulmonary exhalation, that a rod dipped in hydrochloric acid gives white fumes when held in the respiratory current a few seconds afterwards. The evolution of ammonia in the cutaneous exhalation has long been known; and the suddenness with which it sometimes takes place, especially in females, under mental emotion, is an evidence both of the large amount which must be present in the blood, and of the rapidity with which, under conditions not yet known, it may be set free. Dr. Richardson states that the cutaneous evolution is so marked during and after the colliquative sweats of consumptive patients, that he has found a rod dipped in hydrochloric acid give white fumes when held near the cutaneous surface.

Thus it would seem that while the presence of a certain amount of ammonia in the blood is not only a normal condition, but is absolutely essential to the continuance of its fluidity, there is a provision in the pulmonary and cutaneous exhalation for the removal of any excess imparted to it by an acceleration of the ordinary rate of decomposition,

as a consequence either of excessive exertion or of disintegrating disease. In the Appendix to his Essay, Dr. Richardson enters upon various considerations, which seem to connect an excess or deficiency of ammonia in the blood with particular groups of morbid phenomena, and which seem to afford indications for the rational employment of acids and alkalies in the cure of disease. Into these inquiries, however, we shall not at present follow him; since the subject has been hitherto far too little elucidated to admit the establishment of any satisfactory conclusions. Thus for example, in regard to typhoid fever, it is by no means so clear as Dr. Richardson seems to suppose, that the excess of ammonia in the blood is to be regarded as the essential phenomenon of the disease; for to us it seems more likely that it is only a result of that disintegrating change in the fluids and solids of the body which is the consequence of the action of a zymotic poison upon them. Still this portion of the work is eminently suggestive; and we trust that not only by the author himself, but by many others, will observations and experiments be systematically carried on, with the view of accumulating a body of information upon these important questions, on which valid pathological principles and sound rules of practice may be securely founded.—*Dr. Richardson's "Cause of the Coagulation of the Blood"; being the Astley Cooper Prize Essay for* 1856.—*Brit. and For. Med.-Chir. Review, July* 1858, *p.* 81.

159.—*Extemporaneous Preparation of Chlorine as a Disinfectant.*—The chloride of lime, usually employed as a means of disengaging chlorine, has, besides its price, the inconvenience of being rather rapidly exhausted. M. Lambossy substitutes for it a cheap and simple preparation, consisting of common salt, red-lead, sulphuric acid, and cold water. The red-lead is mixed with the salt, and introduced into a bottle full of water. The sulphuric acid is added afterwards gradually, and shaken at intervals. By this process, sulphate of lead is formed and precipitated, and sulphate of soda and chlorine remain dissolved in the water. The chlorine, which gives the liquid a yellow colour, is disengaged as soon as the bottle is opened. To produce a more rapid disengagement, the liquid is poured into flat plates, so as to offer a large surface for evaporation.—*Brit. and For. Med.-Chir. Review, July* 1858, *p.* 252.

160.—ON CAMPAIGNING IN THE HOT SEASON IN INDIA.

By J. E. Dempster, Esq., Superintending Surgeon, Bengal Army.

At a time when the prospect of a hot weather campaign for the greater number of our European soldiers in India amounts almost to a certainty, the following account of the sanitary condition of the

troops engaged in the seige of Mooltan during the hot season of the year 1849 may not be without interest either to the medical or military reader. Without losing sight of the fact that long-continued exposure to a high temperature is, as a general rule, destructive to the health and vigour of the European constitution, the subjoined narrative will, I think, show that a temporary exposure to great heat is not, *per se*, so dangerous as is generally supposed; and that if care is taken to exclude other and more baneful influences, the European soldier may take the field with comparative impunity even in the hottest months of the Indian year.

The force under Sir W. S. Whish took the field in July, 1849. The fort of Mooltan was notoriously the hottest spot in any one of the hottest regions of the north-west provinces—according to native report, a very "jehannum;" and the district in which the fort is situated had the worst possible reputation for insalubrity during the latter months of the year. Much anxiety was everywhere expressed for the fate of troops sent to such a locality at such a season. The measure was loudly condemned by the local press, and not a few prognosticated that General Whish's force would be first prostrated by disease, and then fall an easy prey to an active enemy. Happily the result entirely falsified all these evil anticipations.

During the first few marches a number of men fell victims to that fearful disease, the apoplexy of the hot season; and it is here worthy of remark that the fatal seizures usually occurred about three o'clock in the morning, and long before the sun was above the horizon. But the European constitution, under the influence of excitement, soon accommodated itself to the circumstances in which it was placed, and two full European regiments, with a large proportion of European artillery, continued under canvas during the hottest and most unhealthy months of the Indian year, and not only escaped all unusual sickness, but were literally as healthy in all respects as they could have been in the best cantonment of the Bengal presidency.

If I can satisfactorily show how it happened that the European soldier suffered so much on first exposure to a very high temperature, and how he afterwards obtained such immunity from disease, some valuable practical deductions will probably result.

When the force left cantonments, the hot wind was blowing like a blast from a fiery furnace. Up to the hour when the European soldier was thus suddenly called upon to perform fatiguing marches in such a temperature, he had been leading a life of comparative sloth and inactivity, and it cannot be doubted that in too many instances he had been in the habit of consuming large quantities of ardent spirits. It is further probable that a few days' supply of the accustomed indulgence was carried into the field either by the men themselves or by their camp followers. Is it surprising, then, that frames stimulated with ardent spirits, unaccustomed to exercise, and suddenly subjected to bodily fatigue in such a burning atmosphere, should in some

instances have sustained a fatal injury? But once fairly on the march, and in a foreign territory, all would be restricted to the ration allowance of spirits, and all would be daily becoming broken into regular bodily exercise. These considerations will, I think, account for the first fatal effects of exposure to a temperature which was afterwards borne with comparative impunity.

I shall now attempt to account for the unusual healthy condition of the troops during the remainder of the hot season.

1st. In the provinces under consideration the periodical rains are always late, and often scanty and precarious. In 1849 no rain fell at Mooltan until near the end of October, when we had one smart refreshing shower, the precursor of the cold weather. Up to this period the sky had been cloudless, the air intensely hot and arid, and not a tree to shelter the tents of the men from the fierce rays of the sun. Tables, chairs—nay, the very bedclothes in the tents, felt literally hot to the touch! When General Whish approached the Mooltan territory, he fortunately took and held possession of the head of the main canal by which the surrounding country is irrigated on the periodical rise of the great rivers of the Punjab. His object was to cut off the means of filling the ditch of the fort, but in doing this he unconsciously brought about other and perhaps more important ends. In such a season as the one just described, without a drop of rain, and deprived of the usual means of irrigation, all the ground in the neighbourhood of the camp remained parched and absolutely sterile. The air also continued, from the same causes, hot and dry in the highest degree. To these conditions, both of the soil and atmosphere, I believe we mainly owe our singular immunity from the usual diseases of the locality and season of the year. Without a certain degree of moisture there can be neither vegetable reproduction nor decomposition. If, then, the poison we call malaria be a product of the decomposition of vegetable matter (as I believe it really is), it cannot be evolved from a perfectly dry soil in a perfectly dry atmosphere. So antiseptic was the air of General Whish's camp, that the carcases of dead animals, instead of putrefying and giving out offensive effluvia, dried up into black, inodorous mummies. It thus appears that, although the troops were subjected to intense atmospheric heat, a combination of circumstances had happily secured to them that year a *non-malarious locality*.

2ndly. A complete and well-regulated conservancy system was organised by the medical staff, and rigidly enforced by the general in command, during the whole period of the siege. This specially included ventilation, and care not to overcrowd the tents of the men.

3rdly. I may safely assert that the commissariat and medical arrangements were complete in all respects, and that the soldier, whether in health, or sick or wounded in hospital, wanted for nothing that he had a right to look for in the best cantonment.

4thly. Situated as the force then was, it was impossible for the men

to obtain a drop of liquor beyond the moderate allowance regularly served out from the government stores.

Whatever were the real causes, the fact is undoubted, that the troops engaged in the siege of Mooltan that year formed one of the most healthy portions of the Bengal army. Another example of nearly the same kind may further serve to allay public anxiety at the present moment.

On the annexation of the province of Oude by Lord Dalhousie, a single European regiment (H. M. 52nd), was left to garrison Lucknow, and it became necessary to find shelter for the men in the native city before the setting in of the ensuing hot weather. A large and lofty range of buildings, known as the "King's Mews," was made over for this purpose, and the barrack department was directed to clean and otherwise put it in a fit condition for the reception of European troops. The barrack accommodation thus hastily provided was much more spacious and convenient than could have been looked for in a native town: but in carrying out the necessary alterations a most grievous mistake was committed. When first made over to the military authorities, the floors of the building, and especially the floors of the "verandahs," were much broken and full of deep excavations, and outside there was an enormous dung heap, the accumulation of years of stable litter of all kinds. In executing the order to repair the floors and remove the old litter, the native superintendent thought he could most speedily and easily effect both ends *by filling up the hollows in the floors with the old and now disturbed dung and litter*, and smoothing all over with a neat covering of clay and plaster? This was not discovered until afterwards. Not long after the regiment had, on the approach of the hot weather, taken possession of their temporary barracks, cholera, in a very virulent and fatal form, broke out amongst the men, although that disease was nowhere else known to exist in the crowded and dirty city of Lucknow. A special medical committee, of which I was president, was assembled to determine what was best to be done under such circumstances. The committee, considering the disease to have been of local origin, recommended that the regiment should be immediately moved out into camp to a well-drained and open plain some distance from the city; that an extra number of tents should be furnished for the accommodation of the men; and that, the sick being left behind in hospital, all communication should be strictly cut off betwixt the hospital and standing camp. If after the first move cholera still continued, it was further recommended that the regiment should again change ground in an opposite direction, and so to keep moving at short intervals until the disease entirely disappeared. The obvious objection to these measures was, that the hot weather was fairly set in; that such exposure would subject Europeans to the severest forms of tropical disease; and that the remedy might prove a worse evil than the one we desired to avoid. To this it was answered, that, proper precautions being taken, the risk of

this exposure was not so great as it appeared to many, and that, even under the worst circumstances, it was better to encounter the contingent risk of ordinary tropical disease than to bear the brunt of virulent endemic cholera. The committee's recommendations were adopted. After going into camp a decided improvement took place both in the number and severity of the cases; but the disease was not extinct. A second move was then determined on: the regiment took up a fine, clear, elevated position not far from the Alumbaugh, and in doing so fairly left the cholera behind. Meanwhile energetic measures were taken to clear and purify the old temporary barracks, and to provide additional accommodation for the men if disease in any shape should force them to seek better shelter from the sun than that afforded by tents. But the cholera having disappeared, they happily remained in other respects unusually healthy. This being the case, it was determined "*to leave well alone*," and the regiment continued with perfect safety under canvas during the whole of the remainder of the hot season.

The following practical lessons may, I conceive, be drawn from the facts related above,—viz.: That if circumstances should urgently demand the presence of European troops in the field during the hot weather, it is essential, as far as possible, to take the following precautions:—

First and chiefly—To select a well-drained non-malarious locality. Without this, all other measures will prove ineffectual.

Secondly—To enforce a judicious system of sanitary and conservancy regulations, especially including ventilation, and care not to overcrowd the tents of the men.

Thirdly—Strictly to prevent the men from procuring unwholesome country liquor, or a drop of ardent spirit beyond the regulation allowance served out from the commissariat stores.

Fourthly—If cholera in an epidemic form should break out in camp, at once to change ground, avoiding the course of great rivers and main roads; and to continue so changing, at short intervals, until the disease disappears.

I need not here insist on good commissariat and medical arrangements, without which it is hoped no British force will ever again take the field.

If all these conditions can be secured, a hot-weather campaign, if unavoidable, may be contemplated with little comparative alarm.—*Lancet, June* 5, 1858, *p.* 553.

161.—ON THE IMITATION OF NATURAL SPAS.

By Dr. Aldridge.

Having had my attention directed, for a considerable time, to the possibility of exactly imitating the natural spas, and being at length entirely successful in reproducing by chemical means, some of the

most complicated and valuable, I was induced to present some specimens of this new manufacture to the Surgical Society of Ireland, at its sitting on the 10th of April, a report of which appeared in the 'Dublin Medical Press,' on the 27th of the same month. Since the publication of that report I have been requested, by several members of the profession, to publish the formula that I have employed in the preparation of these waters, and a little reflection has determined me to do so; for although a prior claim is due to Messrs. Bewley and Evans, of this city, who have enabled me to carry my researches to a successful issue, and who have made the necessary arrangements for the manufacture of these artificial spas, yet the advantages capable of being derived from their employment may be much extended by enabling other manufacturers to prepare them in an exactly similar manner.

The spas that I have hitherto succeeded in imitating are the Rakoczy and Pandur Brunnens, at Kissingen, and the Elizabethan Brunnen, at Homberg. These are all so similar to each other—only varying in the proportions of their constituents—that it will be only necessary, at present, to give the formula for one of them. The one that I propose for this purpose is that of the Rakoczy :—

Lime-water, 3 wine pints.
Carbonated solution of magnesia, 11 ozs.
Bewley and Evans' soda water (No. 4), 12 drs.
Sulphate of iron, 8 grs.
Sulphate of manganese, 1 gr.
Phosphate of soda, 2 grs.
Chloride of sodium, 1 oz.
Carbonate of potash, 10 grs.
Muriatic acid (1160), 4 drs.
Bicarbonate of soda, 5 grs.
Silicate of soda, 30 grs.

Dissolve and filter the solution; divide into twelve equal parts; put each part into a bottle capable of holding a wine-pint; fill up with Bewley and Evans' Soda Water (No. 1), and cork rapidly.

The contents of one of the above bottles, taken in divided portions, about an hour before breakfast, will be found to possess all the physiological effects of the spa drank at the source. It will be found useful in cases of gout, dyspepsia, epigastric fulness, habitual constipation, neuralgia, obesity, &c. It is well not to continue its use for a longer period than nine days or a fortnight, and to follow the treatment by the exhibition of some mild tonic. Its employment is unsafe when there is weak action of the heart, or where there is a tendency to cerebral congestion, or hemorrhage from any surface.—*Dublin Hos. Gazette, May* 1, 1858, *p.* 134.

162.—*On the Iodide of Calcium.* By Dr. J. Pidduck. (Read before the Royal Medical and Chirurgical Society)—The object of this short paper was to bring before the Society a new preparation of iodine in combination with lime. The history of the salt and the mode of preparing it, its solution, and some of its compounds with other articles of the Materia Medica, were published in the 'Lancet' of December 8th, 1855. Since that time it has been used extensively in public and private practice, with satisfactory results. It had not been brought forward with a view to supersede the valuable preparations of iodine already in use, but as a preparation which might be used in cases wherein the iodide of potassium was inadmissible. Its advantages were: that the solution given in milk was tasteless; that being readily decomposed by the weak acid of the stomach, it was presented for absorption in a state of atomic division; that it did not excite the circulation, nor irritate the stomach and bladder by passing off too rapidly by the kidneys; that it did not occasion iodism nor resorption of the healthy tissues. The diseases for which it had been successfully prescribed by the author, besides those strumous affections for which the other preparations of iodine were generally used, were: chronic catarrh and bronchitis; incipient phthisis; squamous diseases of the skin; chronic metallic poisoning by mercury, lead, and copper. Under its administration the gums had become healthy, the fetor of the breath had been removed, the neuralgic pains had been relieved, and the patient's health had been restored. The forms in which it had been prescribed were: the simple solution; the solution and compound fluid extract of sarsaparilla, and fluid extract of dandelion; the solution and tincture of sesquichloride of iron; and with other tonic and bitter vegetable infusions not containing starch.—*Lancet, June* 26, 1858, *p.* 628.

163.—*On a New Method of Preparing the Phosphate of Lime of Bones.* By M. Dannecy.—On the ground of the necessity which exists for the administration of phosphate of lime in the molecular state which is best adapted for its incorporation into the living organs, M. Dannecy, of Bordeaux, proposes the following preparation of this salt: Beef-bones, washed and powdered, common water, and pure carbonate of potash or soda, are boiled together for an hour, when a perfectly homogenous substance is formed; this substance is thrown upon a paper filter, and the alkaline liquid flows out; the mass is washed at several intervals with hot water; it is then dried and passed through a silk sieve, when a powder of excessive tenacity is obtained, soft to the touch, and of a mobility equal to that of lycopodium. This powder contains all the natural elements of bones, but without the gelatine which holds them together; the disaggregation attains its utmost limit, and is truly molecular. The phosphate of lime of bones

thus prepared is easily kept in suspension in potions and in cod-liver oil, and it is easily moulded into different pharmaceutical forms. as pastiles, pills, &c.—*Brit. and For. Med.-Chir. Review, July* 1858, *p.* 241.

164.—*Improved Adhesive Plaster.*—M. Colson, as the result of twenty years' trial, recommends the following plaster in place of the ordinary diachylon, as it never gives rise to irritation or erythema.

R. Olive oil 500, minium 250, yellow wax 185 parts.

These are to be heated together and stirred round with a spatula until the mixture assumes a black colour, when it is to be taken off the fire, and stirred until quite thick. It is then to be formed into rolls on a marble table.—*Révue Méd.—Med. Times and Gazette, Aug.* 7, 1858, *p.* 150.

165.—*Broth and Beef-Tea.* By Dr. J. B Hicks, London.—I have ventured to occupy a few lines with a description of an apparatus, constructed to my directions, for making broth and beef-tea, &c., which, though simple, possesses, what is I believe a desideratum for the invalid, namely, the property of producing broth

1. Free from fat,
2. Free from smoky flavour.
3. Ready for use five minutes after removal from fire.

Every one knows how disagreeable to a delicate appetite, or a sickly stomach, is the smallest amount of fat floating on broths, and how annoying it is to the medical attendant to be told on inquiry in a case of urgency, that the patient had refused the broth ordered, in consequence of grease or smoke, or that he had to wait some hours for the fat to cool before removal.

The apparatus consists of two tinned vessels, one fitting loosely into the other. The outer is furnished with a small stopcock set flush with the bottom. There are three small knobs about a quarter of an inch, soldered beneath, to keep it off the saucepan, and allow water to flow under; also a wire handle, and cover like a small milk-can. The latter has a small hole in centre to allow steam to escape. and is slightly convex to throw off the wet. The inner vessel is perforated at the bottom, and has on its rim a small projection for the finger to draw it easily out. In using it, place the one in the other, fill the inner with the meat, pour in cold water, cover over and place in a saucepan which has been partly filled with cold water; cover that over; gently simmer for four or five hours. When done, withdraw the apparatus from the saucepan, uncover and draw out the inner vessel, containing the exhausted meat, press out the broth it retains into the outer vessel, which now contains the fatty broth. Wait five minutes to allow the fat to rise to the surface, then draw off the broth by the tap, shutting it off just before the fat is about to come, when it must

be stopped. The broth will be found to be perfectly free from fat or smoke. Should fat have accidentally escaped, return the whole to the vessel, wait five minutes, and draw off again. A glance at the apparatus will show its principle, and it is not so troublesome as the jar inside the saucepan. I send a section of it. I have used one constantly at home, and all who possess them speak highly of their certainty and convenience.—*Med. Times and Gazette, Aug.* 28, 1858, *p.* 230.

166.—*A Substitute for Human Milk.* By Dr. C. H. F. Routh, Physician to the Samaritan Hospital for Women and Children.—[The human milk contains, besides salts of lime, chloride of potassium. Now, in common with carbonic acid, this salt enjoys the peculiar property of dissolving carbonate of lime or chalk. An absence of it in the food, as in wheat bread, is very injurious to a growing child. Hence a child fed on pap for a time grows fat, but the bones are soft; frequently it sickens, and severe symptoms supervene.]

Amongst the vegetable substances, that which comes closest to milk in its composition is, without doubt, lentil powder, or, as it is called for the purposes of obtaining a better sale, Revalenta Arabica, containing both phosphoric acid in abundance, and chloride of potassium; it also includes casein, the same principle which is found in milk in its constituent parts. Moreover, its nutritive matter is to its calorifiant matter in the proportion of 1 to $2\frac{1}{2}$, milk being in that of 1 to 2. No wonder, therefore, that under its influence many children affected with atrophy and marked debility have completely recovered. I have given it with the very greatest advantage in such cases, and, so far as I may judge from my own experience, I should conclude that practice fully carries out what theory, from a knowledge of its composition, would have led us to anticipate. Lentils have also a slightly laxative effect, and therefore, in many instances, where the child is of a constipated habit, they are to be recommended. Peas and beans in this respect resemble lentils; the former, however, is objectionable, on the ground that it produces much flatulency. The latter is not generally obtainable; still the bakers take advantage of this fact in regard to the beans, and usually, where wheat by partial germination has lost some of its nitrogenous aliment, or where the flour used is poor in quality, they add a proportionate quantity of white bean flour, to restore it to its proper nutritive value.—*Med. Times and Gaz., Aug.* 28, 1858, *p.* 215.

167.—TESTS FOR ADULTERATIONS OF MEDICINAL SUBSTANCES.

By Dr. Squibb.

Dr. Squibb having had much practical experience in the preparation of officinal substances for the United States' navy, believes that advan-

tage may attend the publication of a few simple tests of their purity, requiring little time, skill, or apparatus for their applicatiou.

Ether.—A strip of unsized paper, or a clean glass rod, dipped into the ether and allowed to dry for a moment or two, will, by the odour it gives, afford evidence of the less volatile impurities it commonly contains. There usually remains a somewhat aromatic, slightly pungent odour, that is not hurtful in the more dilute ether used for common medicinal purposes, but the disagreeable oily odour often found is more objectionable, while really good ether should leave no odour whatever. The ether used for inhalation should leave no foreign odour whatever. The strength of ether is less easily ascertained ; but with a little practice, and having a good specimen for comparison, a very satisfactory estimate may be found in the slowness or rapidity of its evaporation from the palm of the hand. Ether for inhalation should give off bubbles of vapour rapidly at the temperature of the palm. A thin test tube, containing the specimen, should be grasped firmly for a minute or two, and then the ether should be stirred at the time of observation.

Hoffmann's Anodyne.—Two drops of officinal compound spirit of ether, stirred into a pint of water, give to the mixture a distinct oily surface, and the peculiar fruity, aromatic odour of the heavy oil of wine free from the odour of ether and alcohol. Sixty drops render the water decidedly turbid: while, with four fluid drachms. a scanty precipitate of minute oil globules occurs after a few minutes standing. The fruity, apple-like odour is characteristic of the chief anodyne ingredient, the oil of wine, and is entirely wanting in the ordinary commercial article ; and without this oil the preparation is a stimulant antispasmodic. With the oil it is a highly valuable anodyne antispasmodic, particularly adapted to nervous irritation and hysteria. The liquid universally sold is a residue of the ether-making process, containing varying proportions of ether and alcohol, with a little etherole or light oil of wine; but in no instance of the many examinations made by the writer, has any true heavy oil of wine been found.

Spirit of Nitric Ether.—Two or three fluid drachms of good sweet spirit of nitre, not more than seven or eight months old, plunged, in an ordinary test tube, into water heated to 164°, will boil pretty actively ; and, if fresh, or if well preserved from light and air, no matter what its age, it will boil actively in water at 156°. From the fact that this, among other liquids, may be heated far above its boiling point without ebullition, it becomes necessary to drop a few fragments of broken glass into the test tube with the spirit, after the latter has been heated and while still held in the water. Again, the formation of small gas bubbles around the fragments of glass, which occurs, as a fine effervescence, at any temperature above 140°, in any spirit that contains hyponitrous ether at all, must be distinguished from true ebullition, in which the bubbles are much larger, and form,

as they successively reach the surface, beads around the edge of the liquid—this latter only occurring at the temperatures named. The preparation should not be quite colourless, but of a pale straw tint, and it should effervesce very slightly on the addition of carbonate of ammonia. When slightly acid the ammonia is the best corrigent, as the salts formed are therapeutically similar. The officinal preparation is a solution of five per cent. of hyponitrous ether in alcohol, while in commerce it is rare to find it containing more than three per cent., and in a great majority of cases it is below two per cent., and often in a proportion too small to be detected except by the odour. It thus happens that the physician who prescribes it for its diuretic or diaphoretic effects is disappointed, so much alcohol being substituted; and the preparation is falling into consequent disuse.

Chloroform.—When equal volumes of chloroform and colourless concentrated sulphuric acid (or the strong commercial oil of vitriol) are shaken together in a glass-stoppered phial, there should be no colour imparted to either liquor, or but a faint tinge of colour, after twelve hours standing. Nor should there be any heat developed in the mixture at the time of shaking it first. All particles of dust, cork, or other organic matters must be excluded, or colouring will be produced; and if at the end of twelve hours the acid be only faintly tinged, it may be attributed to some such accidental cause. If, however, then or sooner it has become yellow, brown, or any dark colour, the chloroform should be rejected. If warmth takes place on first shaking the mixture, it indicates an admixture of alcohol. One or two drachms of chloroform, spontaneously evaporated from a clean surface of glass or porcelain, or from clean, unsized paper, should leave no odour. Commercial chloroform will generally turn the acid brown in two or three hours, and will often render it black and tarry-looking within two or three days; while with chemically pure chloroform there is absolutely no reaction within many days.

Calomel.—The most common and injurious contamination is corrosive sublimate, which is easily detected by shaking a drachm or two in a test tube, with distilled water, and, when the water has become clear, adding a drop or two of liquor ammonia. This will precipitate the sublimate, and render the water cloudy.

Iodide of Mercury is often irritant and harsh in its action, owing to contamination with biniodide from faulty preparation. This is detected by rubbing a little of the iodide in a mortar with strong alcohol, and leaving it a few minutes to dry. The evaporation of the alcohol leaves the red iodide as a border to the iodide around the pestle, and in this way a minute contamination is detected.

Mercury with Chalk has of late been often found harsh and irritating in its action, owing to faulty preparation, a portion of the mercury becoming oxidised instead of being simply comminuted. To detect the peroxide a drachm or two should be treated with an excess of acetic acid filtered, and then a few drops of hydrochloric acid added

to the clear solution. If the preparation be good only a slight precipitate of insoluble subchloride will take place, from the small quantity of acetate of suboxide formed. If the preparation be old or badly kept a pretty copious precipitate results. The clear solution is again filtered or decanted off this precipitate, and liquor ammonia is added. If the preparation is contaminated by the peroxide it will be thrown down in the form of white precipitate.

Blue Pill may also contain the oxides of mercury, and thus lose its mild character. They may be detected in the same way as in the mercury with chalk.

Iodide of Potassium is occasionally contaminated with carbonate of potassa, to the extent of impairing its medicinal power. This is easily detected, by adding lime-water to the solution of the iodide, when carbonate of lime will be precipitated, rendering the mixture cloudy.

Bitartrate of Potassa frequently contains much tartrate of lime, which may be detected by stirring a few drops of liquor ammonia into a mixture of a few grains of the specimen in two or three drachms of cold water. The ammonia renders the otherwise insoluble potassa quite soluble, while it has no immediate effect on the tartrate of lime. If then a portion remain undissolved after the application of this test, it may be regarded as an impurity.—*American Journal of Medical Science, and Med. Times and Gazette. Sept.* 11, 1858. *p.* 279.

168.—*Preserving Fluid for Microscopical Preparations.*—M. Pacini strongly recommends the following fluid for the preservation of blood globules, nerves, ganglions, the retina, and all the soft tissues, which keep their form and appearance while they become hardened: perchloride of mercury 1, chloride of iodine *(chlorure iodique)* 2, glycerine (at 25° of Baumé) 3, and distilled water 113 parts. The mixture should stand for two months, and then 1 part of the liquid is to be diluted with 3 parts of distilled water and filtered.—*Bull. de Thérap.* —*Med. Times and Gazette, Sept.* 11, 1858, *p.* 279.

169.—*Iodate of Potash.*—Messrs. Demarquay and Custin consider that the action of this salt is more powerful than that of the chlorate of the same base, and that it has yielded excellent results where the chlorate of potash had failed. The dose varies from five to twenty-two grains, and it has been used in diphtheritis, mercurial and gangrenous stomatitis, &c. From M. Millon's directions, the salt may be obtained as follows:—One part of iodine and one of chlorate of potash are brought in contact with six parts of boiling water, acidulated with a few drops of nitric acid. When chlorine ceases to be given off, a concentrated solution of chloride of barium is added to the liquor. The washed iodate of barytes is then decomposed by sulphuric acid, the sulphate of barytes is separated by filtration, and the fluid is slowly

evaporated. The crystals of iodic acid are then washed with distilled water, re-dissolved in boiling distilled water, and the solution saturated with bicarbonate of potash. A great portion of the salt is deposited in little crystals on cooling.—*Lancet.*—*Dublin Hosp. Gazette, Sep.* 15, 1858, *p.* 286.

170.—ON THE NATURE AND TREATMENT OF INFLAMMATION.

By Dr. J. Cameron, Surgeon to the Southern Hospital, Liverpool.

(Read before the Liverpool Medical Society.)

Whenever inflammation arises, *exudation* may be considered an essential part of the process. Dr. Alison observes, that its occurrence cannot be explained on mechanical principles—simply as a relief to the obstructed capillaries; but that its appearance must be considered due to some modification of the vital and chemical affinities of the blood and the tissues.

The resemblance that we are able to trace between the reactionary phenomena of the inflammation, and those which are set up as part of the reparative process after injuries, would favour the supposition, that in inflammation the subsequent use of the exudation may be intended to promote a return to a healthy action; so that it becomes important to determine the character of the truly physiological, *healthy* type, as contra-distinguished from that which is purely morbid.

When inflammation occurs in external parts, we are often able to distinguish the more or less healthy character of the products; but the solution of the question is surrounded with greater difficulties when it is internal. Mr. Paget takes "lymph" as the healthy standard, and describes two varieties, the fibrinous and the corpuscular; the first apt for development; the second prone to degenerate, and probably leading to suppurative inflammation. This difference he attributes chiefly to the *condition of the patient*, "the highest health being marked by an exudation containing the most perfect and unmixed fibrine; the lowest, by the formation of the most abundant corpuscles, and their nearest approach, even in their early state, to the character of pus-cells."

He looks upon *mucus* as probably a modification of lymph. The effusion of *serum*, he believes to be a rare event, except as the result of the lowest degrees of inflammation, or as a diluent of other products.

He looks upon *pus* as the most frequent product of the degeneration of inflammatory lymph, and states that it ensues in nearly all cases in which lymph is placed in conditions unfavourable to its development; as in the persistence of the inflammation; or in exposure to air; or in the general depression of vital force.

In relation to these effusions, Mr. Paget adds:—"The expression

'increased action' may be in some sense justly used; for the weight of an inflamed part, or of the material separated from it, may be much increased by the formation of organised matter. The material formed presents only the lowest grades of organisation, and tends to degeneration, so long as the inflammation lasts." And, "we may be sure that a comparatively small amount of force is sufficient for the production of low organisms, such as are the fibrinous and corpuscular lymphs of inflammation, often produced in the final inflammations so frequent in the last stages of granular degeneration of the kidneys, of phthisis, of cancer, and other exhausting diseases." Many other varieties of local inflammation might be adduced to confirm these important observations; but I would especially include those diseases in which a fibrinous exudation takes place from mucous membranes, as diphtheritis, the severe forms of acute dysentery, and croup: * it is, under these circumstances, no less remarkable for its abundance, than for the rapidity of its production, and the coincident exhaustion of vital power.

In endeavouring to obtain, by the examination of the tissues, evidence of the state of the vital powers of the part affected, we must keep in mind the conditions essential to healthy nutrition; these consist in a correct adjustment of the quantity, quality, and movement of the blood; together with an adequate supply of nervous influence,—conditions which are most seriously interfered with during the existence of the inflammatory process; although the amount of blood in the part is abnormal, its movement through the capillaries is retarded or arrested, its quality undergoes deterioration, its specific gravity is lowered, the albumen lessened in quantity, and the red globules diminished in number; the fibrine being increased. The nervous supply of the part being either perverted or deficient; and whatever production of nutritive material occurs, has a *lower* organisation than that of the tissues among which it is effused; hence we see the changes which Mr. Paget so aptly calls "destructive," interstitial absorption, softening, ulceration, or death. This deterioration of the tissues is still more manifest when the inflammatory process supervenes in a cachectic state of the body, and, when the inflammation is intense and long-continued, often lays the foundation of atrophy or some form of degeneration.

The debilitating effect of inflammatory action is further made evident by the liability of a part once affected to experience a return of the disease. Besides this local predisposition, we see a constitutional tendency to its attacks among the weakly and ill-fed; whilst the strong and vigorous, those in whom the blood is abundant in quantity and good in quality, escape with comparative impunity. We have also seen that after section of the sympathetic nerve, exudations take place from the serous and mucous membranes; and in some

* The want of success, which usually attends the treatment of croup by depletion and antiphlogistic remedies, was mentioned in the MS., as corroborating this view.

instances ulcerations of the part, changes more certain to ensue in proportion to the weakness of the animal operated on; the striking analogy between these results, and the phenomena of inflammation, corroborate the view which seems most consistent with the entire history of the process, viz., *that from its very earliest development, and during its whole progress, it is essentially associated with a depressed state of the vital powers.*

If this theory of the nature of the inflammatory process be correct, it is evident that the antiphlogistic regimen is not the most likely to restore the patient to health, while in some cases it must prove positively injurious, and may even hasten death.

The limits imposed upon me by the nature of this communication render it necessary that I should be brief in alluding to the principal practical objections to the usual antiphlogistic treatment of inflammatory diseases.

Agreeably to the views advocated in the preceding remarks, the energy of the heart is already depressed; hence the objection to the practice of blood-letting, which is assumed to act beneficially by "reducing the heart's action." This remedy is also resorted to with the view of "lessening the supply of blood to the part;" but could this object be accomplished, it would not be desirable, if we believe that the afflux of blood to the part takes place in consequence of changes, either analogous to the processes of repair, or, according to Dr. Bennett, to those of increased growth, and is necessary for the completion of these changes.

With respect to the use of mercury, admitting that its value as a medicine arises from its inducing some new action in the system incompatible with the one already existing, I have for many years observed that there is the greatest difficulty in exciting the peculiar effects of the drug until the acute symptoms begin to subside,—a difficulty always greater in proportion to the violence of the inflammatory fever. It may, however, be said that the subsidence of the disease, under these circumstances, really takes place in consequence of the influence of the mineral upon the system; but in opposition to this view, I would refer to the well-known fact that numerous cases do recover without any of the usual manifestations of mercurial action, and that even when these have been induced to their fullest extent we often find instances of the persistence of disease, and not unfrequently of its extension; moreover, I think it will be found that the duration of an attack of acute inflammation generally lasts a shorter time in those cases treated without, than with mercury. Nor must we, in our objections to this remedy, lose sight of the irritant character of its local action, and of its tendency to occasion most violent and often unmanageable disturbance of the intestinal canal, accompanied with extreme prostration of the vital powers. It seems to me however, that in the administration of mercury, a medicine is prescribed which has *no direct efficacy* in controlling inflammatory action; whilst

by introducing into the system another cause of irritation, the patient is thereby exposed to an additional source of danger.

But both depletion and mercury have the effect of impoverishing the quality of the blood,—an "organ" the healthy condition of which is essential to the proper discharge of all the functions of life; the process of nutrition, already impaired by the inflammatory action, must therefore be still further interfered with, and the exudations that have been poured out will have a greater tendency to degenerate, and to assume some of the lower forms. These depressing measures must reduce the strength, which is often taxed to the utmost to support the struggle in which the patient is engaged.—*Liverpool Med. Journal.*

171.—NEW DIRECTIONS TO RESTORE THE APPARENTLY DROWNED, ON THE MARSHALL HALL PLAN.

(Issued by the National Life-Boat Institution.)

1. Treat the patient instantly, on the spot, in the open air—exposing the face and chest to the breeze, except in severe weather.

2. *To Clear the Throat.*—Place the patient gently face downwards, with one wrist under the forehead, in which position all fluids will escape by the mouth, and the tongue itself will fall forwards, leaving the entrance into the windpipe free. Assist this operation by wiping and cleansing the mouth.

If there be breathing—wait and watch; if not, or if it fail, then—

3. *To Excite Respiration.*—Turn the patient well and instantly on the side, and—

4. Excite the nostrils with snuff, hartshorn, volatile salts, or the throat with a feather, &c., and dash cold water on the face, previously rubbed warm.

If there be no success, lose not a moment, but instantly begin

5. *To Imitate Respiration.*—Replace the patient on the face, raising and supporting the chest well on a folded coat or other article of dress;

6. Turn the body very gently on the side and a little beyond, and then briskly on the face, alternately; repeating these measures deliberately, efficiently, and perseveringly about fifteen times in the minute, or every four seconds, occasionally varying the side;

[*by placing the patient on the chest, its cavity is compressed by the weight of the body, and expiration takes place; when turned on the side, this pressure is removed, and inspiration occurs.*]

7. On each occasion that the body is replaced on the face, make uniform but efficient pressure, with brisk movement on the back between and below the shoulder-blades or bones, on each side, removing the pressure immediately before turning the body on the side;

[*the first measure increases the expiration, the second commences inspiration.*]

*** The result is—Respiration, or Natural Breathing;—and, if not too late,—Life.

8. After respiration has been restored, promote the warmth of the body by the application of hot flannels, bottles or bladders of hot water, heated bricks, &c., to the pit of the stomach, the arm-pits, between the thighs, and to the soles of the feet.

9. *To Induce Circulation and Warmth.*—During the whole time do not cease to rub the limbs upwards, with firm grasping pressure and with energy, using handkerchiefs, flannels, &c.

[*by this measure the blood is propelled along the veins towards the heart.*]

10. Let the limbs be thus warmed and dried, and then clothed, the bystanders supplying the requisite garments.

Cautions.—1. Send quickly for medical assistance, and for dry clothing.
2. Avoid all rough usage and turning the body on the back.
3. Under no circumstances hold up the body by the feet:
4. Nor roll the body on casks;
5. Nor rub the body with salts or spirits;
6. Nor inject tobacco-smoke or infusion of tobacco.
7. Avoid the continuous warm-bath.
8. Be particularly careful to prevent persons crowding around the body.

General Observations.—On the restoration of life, a teaspoonful of warm water should be given; and then, if the power of swallowing have returned, small quantities of wine, or brandy and warm water, or coffee. The patient should be kept in bed, and a disposition to sleep encouraged.

The treatment recommended should be persevered in for a considerable time, as it is an erroneous opinion that persons are irrecoverable because life does not soon make its appearance, cases having been successfully treated after persevering several hours.

172.—NEW METHOD OF RESUSCITATING PERSONS APPARENTLY DROWNED.

THE SILVESTER METHOD.

This new method, according to its advocate, Dr. H. R. Silvester, possesses many advantages over the "ready method" of Marshall Hall; it is easy of performance, and may be employed along with those other means in which so much confidence has hitherto been placed.

The *Silvester Method* is "a simple imitation of natural deep inspiration, and is effected by means of the same muscles as are employed by nature in that process." In deep inspiration, we lift the ribs and sternum by the pectoral and other muscles which pass between the chest and the shoulders; so in the "new method" the ribs and ster-

num are lifted through the intervention of the muscles, *by steadily extending the arms up by the side of the patient's head.* In this way the cavity of the chest is enlarged, a tendency to a vacuum is produced, and a rush of air immediately takes place into the lungs.

Expiration is brought about by simple compression of the sides of the chest by the patient's arms. Thus "the arms of the patient are to be used by the operator as handles to open and close the chest."

The following rules are to be observed in inducing artificial respiration by this new method.

1. *Position.*—Place the patient on his back, with the shoulders raised and supported on a folded article of dress.

2. *To maintain a free entrance of air into the windpipe.*—Draw forward the tongue, and keep it projecting beyond the lips. By raising the lower jaw the teeth may be made to hold it in the proper position.

3. *To imitate the movements of respiration.*—Raise the patient's arms upwards by the sides of his head, and then extend them gently and steadily upwards and forwards for a few moments. [This action, by enlarging the capacity of the chest, induces inspiration.]

Next turn down the arms, and press them gently and firmly for a few moments, against the sides of the chest. [Forced expiration is thus effected.]

Repeat these measures alternately, deliberately, and perseveringly, fifteen times in a minute.

The advantages of this method, as compared with that of Marshall Hall's, as stated by its author, are the following, and may be thus studied in comparison :—

Marshall Hall's Method.	Silvester's Method.
Expiration is made to precede inspiration—the reverse of the natural order. In still-born infants forced expiration, at first, (as they have never breathed) is, of course, impossible.	Inspiration may be made to precede expiration, or *vice versa*, at the will of the operator.
The warm bath cannot be employed during its adoption.	May be adopted when the patient is in the warm bath.
When the patient is turned on the face (pronated), and pressure made, the contents of the stomach are liable to pass into the œsophagus and trachea.	Contents of stomach not liable to pass into trachea.
In the opposite position, "on the side, and a little beyond" (supinated), the tongue is apt to obstruct inspiration by falling back into the throat.	Tongue effectually prevented from obstructing inspiration.

Both sides of the chest are not equally inflated.	Both sides of the chest are equally inflated.
The amount of air respired is exceedingly small, the *actual* capacity of the chest not being enlarged; (proved by experiment).	A larger amount of air is inspired than by any other method; (proved by experiment).

Lastly, we are told, that whilst the Royal Humane Society directs its attention mainly to the circulation, and Dr. Marshall Hall chiefly to the respiration, the new method of Dr. Silvester combines the advantages of both.—*Abridged from British Medical Journal.—Dub. Hospital Gazette, Aug. 1, 1858, p. 234.*

173.—ON CANCER AND NEW GROWTHS.

By Dr. Samuel Wilks.

[The following observations, on a subject of great interest, are the result of numerous *post-mortem* examinations at the hospital to which the author is attached. Dr. Wilks says:]

We will state at the onset our firm conviction that cancer, in the commonly received acceptance of the term, has no peculiarities which can always distinguish it from other morbid growths, or even from many healthy structures. Some experience in testing this debateable question has satisfactorily proved the truth of the assertion, having seen, for example, well-marked encephaloid disease, which displayed merely small nuclei by the microscope, offering nothing peculiar to the eye of those well versed in the use of the instrument, and, on the other hand, we have known healthy cells from parts of the alimentary canal, from the kidney, from the Pacchionian bodies, &c., considered as cancerous when this idea of their nature was suggested to the observer. Without denying that the microscopic elements of healthy structures have their peculiarities, or that morbid ones essentially differ from them, we believe that our statement is correct, that the peculiarities of cells arising from size alone have not hitherto been sufficient to enable observers satisfactorily to distinguish between them. We think, therefore, that the terms *heterologous* and *analogous*, applied by Carswell to growths, according as they consist of structures foreign to the body or similar to it, are erroneous, although they may be usefully applied in a modified sense. They appear to have been adopted to give scientific expression to the generally received opinions concerning new growths or tumours, that these consist of two classes, cancerous and non-cancerous, or malignant and benignant, thus indicating that the former consist of elements *foreign* to the system, while the latter are composed of tissues *allied*, and therefore innocent. This idea has hitherto been underlying all our technical terms relating to the subject, and much clinical observation as well as microscopic research has been directed to the object of

elucidating the important point respecting the malignancy or non-malignancy of an adventitious product, and we must admit that some very high authorities assert their capability of always making the distinction. They maintain that cancer consists of cells which are disguishable by their form and size, and thus indicate a formation peculiar, and foreign to all other structures. Our own opinion, from long study of the subject and from observations during several years of a multitude of examples of tumours (arising not only from the examination of dead bodies, but from the opportunity of seeing specimens daily removed by our surgeons, as well as those sent to the museum) is, that these new formations exist in very large numbers, and are of very various kinds, and that if they be placed in a list according to the rapidity of growth, disposition to spread, propagation, &c, those at the top of the scale may be styled cancerous, but that no boundary line can be drawn between the last which is styled cancer and the next on the list which has acquired some other name, and also that if the term malignant be applied to those which are highest on the list, and semi-malignant to those below, and innocent to the lowest, that still no clearly defined lines can be made between these divisions. We believe, indeed, that the same rule holds good in morbid anatomy as in all creation, that the transition from one natural object to another is by insensible degrees. With this view of the subject, such defined terms as cancer and malignant afford a hindrance to its proper comprehension, and could they be removed, we think much light would be thrown upon it. As, however, this cannot be done, they must be retained in a qualified sense, and the term cancer be employed to designate two or three of the most malignant forms of growth, the term malignant being itself a relative one, its meaning being a disposition for the adventitious product to return and propagate itself. The question, then, to be asked with reference to a new growth is not so much—is it malignant or not? as—what *degree* of malignancy has it? The answer must be discovered by clinical observation and microscopic investigation. For it is evident that if there be a number of new growths, and some of these consist of fibre, others of bone, &c., that only a small part of the subject is considered by regarding concer alone, for we wish also to know, as in the case of osteoid disease, what is the peculiarity of the bone which constitutes its malignity.

Let us inquire, in the first place, what determines the presence of an adventitious growth or deposit in the body. Two causes are in operation in different cases—a local and constitutional, and upon the separate action of these do we have the extreme forms of benignant and malignant growth, and upon their combination do we have the great number of their intermediate varieties. The first cause alone in operation has a tendency to the formation of a tissue allied to the healthy structures, whilst the latter has simply a power for the production of the simplest elements, as seen in malignant growths. The latter, however, may have secondary characters given them by local

causes, and thus an explanation of the various intermediate forms of morbid productions. To discover how much one cause is in operation and how much the other, we think is the clue to the whole question of new growths, and now we may see a meaning in the terms heterologous and analogous, as applied to new formations, for if the latter be allied to the structures near which they spring, they indicate a healthy influence in operation, and therefore an absence of any vicious constitutional tendency; whereas if they be not allied, that is. consist of cells continually growing for a purposeless object, they indicate a vice in the system; the latter are foreign to a healthy intent, and therefore deserve the name heterologous. In the one case the tendency is to a formative process, and the nearer this approaches to the natural one, the more benignant the structure, while in the other case the tendency is to the production of cells such as existed in the embryo preceding the formation of the tissue, and therefore if such embryonic cells spring up and continue to grow in the perfected body, we have a cancer; a cancerous tumour being simply a mass of embryonic cells. Our meaning is this, that in the healthy organism the blood maintains in integrity the different structures of the body; every part, however complex, we believe is constantly being renewed; this is due to some close affinity between the textures and the blood-ingredients. Let, however, there be some injury by which a breach of surface is produced, a plasma or blastema is thrown out to heal it, but the affinity is in great measure lost, for though the disposition still remains for a reproduction of the parts, the latter is only practicable within certain limits, in the production of the simplest structures, for as regards the viscera, these we know are never reproduced, and the same may be said of muscle and probably of nerve, unless in young subjects. The blastema, then, can only form tissues of the simplest kind, and thus the repair is generally by fibre, or, if near bone, by osseous tissue or cartilage. If the local injury should cause an effusion of blastema not required for the repair of a part, we have a simple tumour springing up, fibrous, bony, &c. Now, suppose there be a vice in the constitution, the disposition in the new formation to ally itself to the healthy tissue shall be still less, and a tumour, which would otherwise have been an innocent fibrous one, shall be further removed from this degree of development, and a mass of cells shall spring up having no tendency whatever to the formation of a tissue, and thus constituting a cancer. In this latter case there is probably a local cause for its production in one part rather than another, though this we know is not allowed by some. Our own opinion is that it is an injured or the weakest part of the body which is the seat of the disease, in an analogous though opposite way in which tubercle appears to attack the most active organs. We think this is seen in numerous instances, such as scars, ulcers, moles, &c., becoming cancerous, cancer of gall bladder succeeding to gall stones, cancer of kidney to calculus, and the same in urinary bladder, several examples of which we have seen; and as

regards injuries, the constant repetition of such a history in all forms of tumours cannot be disregarded, and they afford an explanation of our view of the subject. A part is injured in a healthy person—repair takes place, or a material is thrown out from the blood-vessels, which to a certain extent developes itself; whereas, if there be a constitutional vice, as a cancerous diathesis, the blastema produces a number of cells having no object, and a cancer is formed. In answer to the objection that these cancerous growths pervade all parts, and thus show a general cause in operation, we maintain that they always have a local origin in one particular part, and that the disease is generally local for a considerable period; and in answer to the difficulty why the weakest part should produce a rapid cell-growth, we can only state that this is so; that in the healthy body the disposition is to develop a new material allied to the old and highly-developed tissues, and in the vicious system it is the reverse, and, moreover, it must be remembered that the cachectic condition spoken of in cancer is a result of the disease, and does not pre-exist, and in very many cases is not present at all, and depends, as we have before remarked, upon accidental circumstances; moreover, the most rapidly growing cancers are often in the young. We may here state that the highly malignant growths, having characters allied to those of the parts near which they spring, shows that the local influence imparts a secondary character to them, though it does not remove their nature.—*Guy's Hospital Reports, Vol. IV., p.* 19.

174.—ON CANCER.

By Dr. Maurice Henry Collis, Surgeon to the Meath Hospital and County Dublin Infirmary, &c.

[During the last ten or twelve years the author has made it a point to examine every cancerous or cancroid growth with the history of which he was acquainted, and he still adheres to the cancer cell (in its various forms) as the essential difference or special element by the presence or absence of which we are alone able to pronounce with certainty on the cancerous or non-cancerous nature of any tumour.]

Cancer is a morbid infiltrating growth, the tendency of which seems to be sooner or later to destroy all tissues with which it comes in contact. This morbid substance is only discoverable, at present, in the form of a peculiar nucleated cell; neither chemistry nor the microscope have traced the *materies morbi* higher than this cell: it may or may not exist as a peculiar element in the fluid that forms the plasma of cancerous tumours, or it may even exist in the blood; but of this we have no knowledge, however we may speculate or reason from analogy one way or the other. With the same reservation I would say that cancer has no specific stroma. The stroma of a cancerous tumour appears to be generally made up of the fibrous tissues of the

organ in which the cancer cells are deposited. It often, if not always, presents features of considerable clinical value; it often shows the rate of the development of the tumour, and forms a gauge of its destructive power. It may be distorted or atrophied, or it may be hypertrophied, either by the organization of plastic effusions, or by a process of protective thickening excited by the presence of the cancer cells; but it is not cancer; and in a scientific, if not in a clinical point of view, we must be careful to distinguish between the essence of a disease and its effects.

The characters of the cancer cell are as follows:—

In *size* it varies from the 1-700th of an inch to the 1-1600th; the variation depends on the age of the cell and the rapidity of the tumour's growth. The cells of encephaloid are rapidly formed in great numbers, and are smaller than the more slowly developed cells of scirrhus; in this particular cancer cells resemble epithelial cells, which are round and small where moisture abounds and favours rapid growth, and which are large and flattened out according as circumstances deprive them of their moisture.

The cell wall is delicate, often not to be perceived but by an oblique arrangement of the light, or by touching with very weak vinegar and water. Acetic acid entirely dissolves it. The typical form is round or oval; it is frequently flattened out or pressed on by neighbouring cells, and rendered polygonal; whether by pressure, or more likely by tendency of growth, it is often caudate, and occasionally the tail-like process is elongated into a kind of fibre. In the same specimen great varieties of shape and even of size will be observed; this multiformity is a special characteristic of the cancer-cell.

The nucleus, which is contained in the cell, is much less variable in size and shape: it is large compared with the nuclei of other cells; it is more or less oval; the long diameter is about 1-2500th of an inch; its margins are well defined, much darker than the outline of the cell wall, and rendered more distinct by the addition of dilute acetic acid; the acid not only dissolves the cell wall and granular blastema, but also, if not too strong, it acts directly on the nucleus, perhaps, by coagulating the albumen which it contains. The addition of diluted acetic acid, therefore, renders the nucleus, both relatively and positively, more distinct. Occasionally a second nucleus is perceived in a cell; care, however, must be taken not to mistake the accidental superposition of one cell over another. More than two nuclei are not common, and where more than one exist, they are generally somewhat dwarfed. Nuclei are frequently found free, especially in scirrhus; they resist destructive agents, including decomposition, better than the cell wall. Hence they are often found surrounded by the broken fragments of the cell wall; and as this form of degeneration of the cell occurs more constantly in scirrhus, this is probably a sufficient reason for their being more numerous in it.

One or more *nucleoli* are generally found in each nucleus, similar,

so far as present observation has gone, to the organic granules, which abound in all organizing blastema except that they are sometimes rather larger and more sharply defined.

Besides these, the cell contains fluid almost transparent in recent cases of encephaloid, but more or less granulated under other circumstances, and similar in all respects to the blastemal fluid in which the cells float.

Such is the typical cancer cell, the special element of cancer. In every specimen, however, that we examine, variety of form and outline will present itself; cells will vary in size, nuclei will be found dwarfed, and broken fragments, as well as natural structures, will be mixed up in the field. A sufficient number of typical cells will, however, be found to decide the question, and a little practice enables us to overcome these difficulties. The degeneration of the cancer cell is a common cause of difficulty in detecting its presence. Its destruction appears to take place in two distinct ways: it either dries up and falls to pieces, as all cells do when dried, or it becomes the seat of an oily degeneration. In the former case the nuclei are seen more or less perfect, surrounded by the dust and fragments of the cell wall and its granular contents; in the latter, the cell wall is rendered more distinct, while the nucleus is proportionably obscured by the adhesion of minute drops of oil to the inner surface of the cell wall. Cells, in this state of fatty degeneration, must not be confounded with the compound granular cells, which are sometimes found mixed with cancer, as they are wherever active inflammation is set up from any cause. The compound granular cell is made up of an aggregation of organic granules, and has a mulberry outline; it is round, with granules of an even size, projecting on all sides, while the oily cancer cell is smooth, and contains the oil-drops in its inside; these drops, also, are of all sizes, and the cancer cell is larger than the compound granular cell. Cells only half full of oil will be found in cancer, which will assist the diagnosis; but it is often difficult to distinguish them, and the presence of oily cancer cells in tumours has given rise to mistakes of diagnosis which have done much to retard the general acceptance of the cell theory, as we shall see presently.

The reasons why the cell theory has not been as yet universally adopted are various. Foremost stands the confusion of terms, which in all disputes is the fruitful parent of contention and error. Some surgeons conceive that it is enough for a tumour to be destructive of the neighbouring tissues or of life to give it the name of malignant, and they are right; but when they make the words *malignant* and *cancerous* convertible terms, they are not right. Cancers may remain for years slowly growing, and the patient may die of other disease without at any time presenting a symptom that can be called malignant; and, on the other hand, many diseases are clinically malignant that cannot be called cancers. Velpeau, for example, triumphantly brings forward a case of sarcocele of the testis, the removal of which

was followed by the growth of large cerebriform masses in the abdomen. Microscopic examination found no cancer cells either in the primary or secondary growths. Yet, because the disease returned in this malignant manner, he begs the question, and pronounces the disease to be cancer. Within the last few months a somewhat parallel case has been brought under my notice, which would show the fallacy of his argument. A gentleman who had been treated with apparent success for scrofulous disease of the testis died in a few months of jaundice, and his liver was found infiltrated with innumerable masses of imperfectly organized fibrinous material, so like, in its coarser characters, to cancerous infiltration, that a person not accustomed to view things so closely as a microscopist habitually does, might well be excused for supposing it cancer at the first glance. Yet the clinical history and the examination of the body left no doubt that the disease of the testis was of a strumous nature; and a sufficiently careful inspection of the infiltrations in the liver disclosed points of difference from cancer, even without the microscope. There are, without doubt, cases in which other diseases, such as fibro-plastic tumours, or scrofula, especially when mixed with syphilis, run a most malignant course, and bear a close resemblance to cancer; but we should not be led by these casual resemblances, however close, into the unscientific error of confounding things fundamentally different. It would, therefore, be wise to restrict the terms *malignant* and *benign* to the clinical features of cases, and not to use them as implying any peculiarities of structure.

Of the surgical affections liable to be confounded with cancer, there are some in which error of diagnosis will only occur as the result of ignorance or culpable carelessness,—though, when we read of Liston plunging a lancet into a cancer, and Velpeau amputating an abscess, we may well pause before we censure such mistakes in too harsh language.

Syphilitic tubercle of the lip or face resembles genuine scirrhus very closely, and has been occasionally mistaken for it, and removed by operation. The syphilitic may be known by the absence of sharp, darting, or plunging pains, by its more evenly circular outline, and superficial extent of ulceration; the other by irregular edges, undermined in one place, thickened and everted in another, and by a floor of great uneveness, with the addition of well-marked lacinating pain, as above mentioned, and of radiating fibrous bands, producing faint depressions in the surrounding skin. These depressions not only exist where the lip or cheek is much thickened, but are more apparent; in such a case, as the physical differences are concentrated in a small space, it requires a little practice and some careful inspection of the parts to recognise them: a small pocket lens is of use for this purpose. There are no specific microscopic characters attachable to syphilis in any form or stage; so that any diagnostic evidence of this kind must be negative when the disease is syphilitic.

Of all tumours, simple epulis seems to deviate least from healthy

structure; it is essentially a hypertrophy; the fibrous basis of the mucous membrane is increased in quantity, and the papillæ are much enlarged; with the enlargement of these, the growth of epithelium keeps pace, each retaining at first, and sometimes permanently, its relative position to the other. Generally, however, the epithelium, sooner or later, extends downwards into the interstices at the base of the papillæ, and the disease passes into what is known as malignant epulis, a form of epithelioma. Epithelioma is readily to be distinguished from scirrhus, whether it be found on mucous membrane, or on skin, or on the border ground between them. In all these localities, it has its specific features both in the early stage and when ulceration has advanced. As far as I know at present, it does not occur as a primary disease of the glands, and it never has its seat in the female breast, if we are to believe Velpeau; while cancer in the female breast is more common in its occurrence than all other tumours put together.

Epithelioma specially affects the border ground where skin and mucous membranes meet, and here its special peculiarities are most readily observed. The affection is primarily one of hypertrophy; it is only when ulceration commences that it takes on the more dangerous form of interstitial growth. It commences on the skin as a dry and scabby wart, which falls off from time to time, and exposes on each occasion an increasingly wide surface of ulceration. At the junction of skin and mucous membrane it begins as a chap or fissure, with indurated edges, and has a similar tendency to scab and ulcerate. When it originates on a mucous surface, it is either as a flat condylomatous wart, or as a deposit in the mucous follicles. Thus it is always as local hypertrophy of the investing epithelium that it commences; and from first to last it frequently retains a strictly local character. Many of these growths upon the skin are nothing more than hard horny masses of dry epithelial cells, which occasionally fall off, and are slowly replaced. These may be either prominent or flat; we have frequent examples of them along the edge of the lip upon that part which is covered with coloured skin, external to the line of moist membrane; these are very harmless, and may last for many years unaltered in extent and depth, until accidental violence or inflammatory action excite them to spread. However, in the majority of epithelial growths, ulceration of the integument and deposit of epithelial cells in its substance take place sooner or later. The skin splits into papillæ as in a wart, and the ever increasing deposit of cells upon the surfaces of these papillæ separates them more deeply and more widely apart. A process of disintregation is continually going on in the cells, and the surface of parts not subject to evaporation is soaked in putrid remains. How far this aids in the spread of the disease by exciting inflammatory action and ulceration of the sound structures is hard to say. On mucous membranes, where moisture abounds, and growth is rapid, this tendency to ulcerate is very marked; cauliflower growths from

the uterus, for example, although prominent on the surface, and consisting of aggregations of the epithelial cells, have their seat on ulcerations which may destroy large portions of the organ. The ulcers, when exposed, present jagged, irregular margins and surfaces; enlarged papillæ are visible during the early period of the disease, when the surface is wiped free from discharge; at the edges they may be detected at any period. The neighbouring glands are affected irregularly; sometimes not at all; sometimes at an early stage. The impression on my mind is, that the tendency to infect neighbouring glands is greatest when the disease has its seat on the mucous membrane, and least when it is on skin and fibro-mucous membrane covering the alveolæ. General infection must be extremely rare, for those who still classify it as cancer can bring forward very few satisfactory cases of general poisoning from genuine epithelioma. The disease oftens kills by local destruction and general waste, but without anything which can be called special or peculiar cachexia. When removed, even completely, it will sometimes return in an aggravated form, and with rapidity; but this is quite exceptional; in the majority of cases in which the disease is removed completely, it does not return. All these facts show that there is much less tendency to general posioning than in cancer, and justify us in classing it apart, especially as it is found to possess a different anatomical structure.

Some dissections I have made of epithelial disease of the lip show very plainly the mode of its growth as contrasted with that of healthy epidermis or epithelium. The cells of the ordinary scarf skin are small while in contact with the papillæ from which they spring, and as they advance towards the surface they enlarge by imbibition of the fluid which surrounds them, the enlargement being a vital, and not merely a mechanical process. Arriving at the surface, their growth ceases—atmospheric and other external influence cause them to dry up or burst, and fall to pieces—to be succeeded by fresh layers from within. The growth of epithelial cells is, in fact, guided by the same laws of vital endosmose and exosmose as all other cell-growths are subject to. Each cell, or group of cells, though extra-vascular, is nourished from the blood, and is as dependent on material supplied by neighbouring blood-vessels as if it were in contact with the capillaries. Each cell grows from a minute speck, scarcely discernible by high magnifiers, to its full size, by appropriating to itself the material supplied by the blood. In healthy growth the cells are smallest in contact with the papilla from which they grow. In the early stages of epithelioma, while it remains a true hypertrophy, the cells retain the same relative position to the dermis, though vastly increased in number, and often pushed aside and crowded against one another, so that their order is hard to make out; especially when they collect in the cavity of a follicle.

When ulceration sets in, and when the warty papillæ have become separated, the cells begin to grow in a different fashion; a new phase

in the disease occurs, and from being a purely local hypertrophy, epithelioma becomes an interstitial growth, destroying by pressure, and extending its ramifications to various distances round its original seat. The mode in which this important change occurs is as follows:—In the angle made by the fissure of the skin between the bases of two papillæ, plastic exudation matter is effused; this lymph becomes the seat of growth of new cells, which, as they grow, increase the width of the fissure, and with the width its depth. Still, in the angle, new cells are formed until the interstices of the deeper layers of skin, and the interspaces of the areolar tissue, are filled with epithelial cells. Arriving at the muscles, the plastic lymph insinuates itself between the fibres, and separates them in like manner; by degrees the proper muscular and cutaneous tissue is removed by absorption to some degree, or distorted and displaced in the middle of the mass of cells. The great peculiarity of this interstitial growth of cells is, that near the surface of the papillæ they are larger than they are deep among the fibres of the skin or muscle, in contrast to their healthy arrangement.

This tendency to become interstitial is of the utmost clinical value, and explains to some extent at least, both the mode of propagation to neighbouring glands and the recurrence of the disease after seemingly perfect removal. All through the body vital changes are continually going on. In these the lymph or plasma which moistens all the tissues is the most active agent, or to speak correctly, the capillaries are the agents, the lymph is the material with which they work. Each part of the body takes from this lymph what it needs, and from it muscle builds up muscle, and the same inherent vitality adds another cell to the one that already exists. The material is not exhausted in any locality by being heavily drawn on—on the contrary, the more vehemently active the formative nisus, so much the more abundant is the material supplied through the blood-vessels. The balance of healthy growth is thus destroyed. The lymph now becomes the agent in the spread of the disease. It carries the germs of the morbid growth from the diseased parts into the interstices of neighbouring parts, and lodges them there—thus the little granules from which the epithelial cells are developed are carried into parts at a little distance from the original growth, and become fresh centres of disease. To the same agency is to be attributed the tendency to poison the neighbouring glands, whether follicular, sebaceous, or lymphatic. This should teach us to cut wide of these growths, and to examine the cut margins with a lens. The masses of epithelium are of such a size, owing to rapid accumulation, and the distortions of the natural structures are so considerable, that they are readily detected. This can be done on the spot with a pocket lens, and should never be neglected; and where the smallest deviation from healthy appearance can be detected, the surgeon must not hesitate to remove more and more of the neighbouring parts until the remotest fragment of disease is excised. The eye

is here a better guide than the most experienced finger, but the eye itself must be educated by sufficient study both of healthy and diseased structures.

Of all tumours which are mistaken for cancer, those known as fibroplastic are the most deceptive. Velpeau's case of napiform cancer, mentioned in page 459 of his work on Diseases of the Breast, seems to have been of this class. This case is one of the standing points of those who assert the identity of the two forms of growth. Apart from the fact that this case occurred in 1823, when nothing was known of the nature of such tumours, and that to call it cancer or fibro-plastic is to beg the question, it is enough to say that a few exceptions do not invalidate general conclusions. Here was a case, if you will, of fibroplastic growth, followed by general infection, and deposit of similar tumours in distant organs; but it no more proves the identity of the disease with cancer than a similar general tubercular deposit would. Who has not seen general tubercular infection following a local tubercular tumour, and as clinically malignant as a similar growth of cancer would be?—and yet no one will therefore infer that tubercle of that form is cancerous. This is an example of the mischief done by imperfect or unfair observation.

Another class of growths, namely, the melanotic, are a source of difficulty in settling the question of the nature of cancer. Sometimes they seem to be most virulent; at other times they are very harmless. I have seen a paper by a Mr. Robertson, which gives a clue to the solution, and a practical guide in the question of operation. He says that all cases in which the deposit is confined to the eyeball can be treated successfully by extirpation; while in all cases in which the black matter has been found external to it, among the other contents of the orbit, relapse has followed operation. He gives ample statistics in proof of this assertion.

The instances that I have seen coincide with these statements, and on examination I have found that the growths which are confined to the eyeball do not contain any of the specific element of cancer. They are simply hypertrophies of the natural pigment, which gradually extend into the neighbouring parts by a sort of mechanical infiltration such as occurs in epithelioma; they may distend the eyeball until it bursts, without incorporating the fibrous sclerotic with them; while the cancerous melanosis invariably poisons the sclerotic and the muscles and appendages of the eye. The clinical features of the two are marked by symptoms depending on these differences. The pain in cancerous melanosis is also, as usual, sharp and darting; in the other it is of a bursting, throbbing nature, until the distended sclerotic gives way or is punctured. How far simple evacuation of the humours of the eye could be depended on for a cure of simple melanosis is yet to be determined. I prefer the safer plan of removing the scleretic, an operation by no means difficult. It only requires a light circular sweep of a sharp scalpel to detach the conjunctiva and the muscles

from the surface of the sclerotic, and to pass a curved scissors behind, to divide the optic nerve, and the eye drops out—if the eyeball is much distended, its contents may be previously evacuated by a puncture. This will, however, prevent a satisfactory examination of the growth.—*Dublin Quarterly Journal, May and August*, 1858, *pp.* 330, 54.

175.—ON THE USE OF METALLIC SUTURES AND METALLIC LIGATURES IN SURGICAL WOUNDS AND OPERATIONS.

By Dr. J. Y. Simpson.

Relation of Living Structures to Metallic and Organic Foreign Bodies.—In pursuing the study of metallic as compared with organic surgical threads, there are two general laws in surgical pathology which it seems necessary to consider before we can fully understand the relative advantages and disadvantages of these two forms of surgical sutures or ligatures. The two laws to which I allude have hitherto attracted very little attention from surgeons. They refer to the comparative passiveness of living tissues to the presence and contact of metallic materials, and their excitability and irritation, on the other hand, under the presence and contact of foreign organic bodies derived from the vegetable or animal kingdoms.

Law of Tolerance of Living Structures for the Presence of Foreign Metallic Bodies.—Metallic bodies, when lodged and imbedded without much mechanical contusion or injury in living tissues, produce comparatively little or no irritation by their presence; and if inflammation is excited by their contact, that inflammation is usually limited to the first or adhesive stage, and does not progress onwards to the higher stages or terminations of suppuration and ulceration.

In corroboration of this important general law, let me adduce some individual instances in evidence.

In the lower animals, when a portion of metal is placed in the subcutaneous tissues, and the external wound is closed over it, the foreign body becomes imbedded and fixed in its site, without leading to the production of suppuration and ulceration in the tissues in contact with it. With a view of testing this fact, I had placed deeply in the back and sides of a pig small pieces of gold, silver, copper, lead, and iron. We found no pus effused around these metallic bodies, when the wounds were opened and carefully examined six days subsequently. Around the pieces of gold, lead, and copper there was a thickish layer of coagulable lymph or fibrine, making as it were a complete cast of the foreign body; but showing under the microscope nothing but exudation corpuscles, and granules. Around

the pieces of silver and iron there was no such distinct appearance of an incipient cyst; for the portions of metal seemed to be closely embraced by the surrounding tissues, with little or no adhesive exudation between their contiguous surfaces. In some experiments which Mr. Syme made several years ago upon the dog, with the view of ascertaining whether or not the periosteum could throw out bone upon its internal surface, he introduced between the radius and its periosteum a thin plate of metal, using, I believe, lead for the purpose; and the superficial parts were found to heal "kindly" over and around this foreign body, apparently without any tendency whatever to suppuration or ulceration. . . . He exposed the radius in another experiment, cut away the periosteum, and surrounded the denuded bone with a piece of metal. At the end of six weeks he found a thick, rough capsule formed, enclosing the metallic plate.

But the law holds equally good, that metallic bodies may be lodged within the living tissues of the human body without creating any considerable amount of irritative reaction.

It is a well-known fact in military surgery that in gunshot wounds, after the immediate effects, in the way of contusion and injury, resulting from the mechanical force of the ball, have passed away, the metallic ball itself may lodge in the tissues of the body for months or years with impunity; more especially if the internal vital organs are not touched by it.

Since commencing these inquiries I have had reported to me, by my medical and other friends, several instances in which bullets have remained lodged within the bodies of officers and soldiers still living, and who received them at Waterloo and in the Peninsular war, forty years ago, and upwards. One of the oldest and greatest of military sugeons, Ambrose Paré, when speaking on this subject, remarks:— "Leaden Bullets (says he) lye in some parts of the body some whiles seaven, eight, or more yeares, so that they neither hinder the agglutination of the wound, neither doth any other symptome happen thereupon, as I have diverse times observed; untill at length by the strength of nature forcing them, and their proper weightiness bearing them downewards, they shew themselves in some lower part, by their swelling or bunching forth, so that they must be taken forth by the hand of the Chirurgion. For they say Lead hath a certaine sympathy and familiarity with man's body, chiefely the fleshy parts thereof. Wherefore it neither putrefies it selfe nor causeth the flesh to putrefie; besides it hath an excellent faculty in cicatrizing old ulcers."

To the same effect, in his essay on gunshot wounds, the celebrated John Hunter, when speaking of the practice of leaving the ball, and not dilating the gunshot wound on that account, observes, "This practice has arisen from experience; for it was found that balls, when obliged to be left, seldom or ever did any harm when at rest, and

when not in a vital part; for balls have been known to lie in the body for years, and are often never found at all. and yet the person has found no inconvenience. This knowledge of the want of power in balls to promote inflammation when left in the body arose from the difficulty of finding them, or extracting them when found, and therefore in many cases they were obliged to leave them.

It would be easy to adduce evidence of the same kind from the works of other and later military surgeons, as John Bell, Guthrie, B. Cooper, &c., but additional proof is perhaps superfluous, as the fact is one generally acknowledged in surgical pathology.

Seeing thus that musket-balls may remain lodged without irritation or inconvenience, in contact with the structures of the living body, it is scarcely necessary to add,—what the experience of almost every surgeon can corroborate,—that leaden pellets and small shot do often in the same way lie imbedded for years beneath the skin, or more deeply in the living structures.

In these cases of leaden bullets and pellets lodged for any length of time, the surrounding soft tissues, or a special cyst, embrace and hold firm the enclosed foreign body. "When (observes Mr. Guthrie) a ball has been lodged for years, a membranous kind of sac is formed around it, which shuts it in, as it were, from all communication with the surrounding parts. If it should become necessary to extract a ball which has been lodged in this manner, the membranous sac will often be found to adhere so strongly to the ball that it cannot be got out without great difficulty, and sometimes not without cutting out a portion of the adhering sac." In an old patient, who had been affected more than once with syphilis, Morgagni found on dissection a leaden pistol-bullet, which had been lodged in his thigh thirty years before death. "There was," he adds, "a cyst or membranous follicle about that bullet, with which it was straightly inclosed all round."

Flat pieces of lead may lie imbedded in the tissues of the human body, with apparently similar impunity to round bullets and pellets. Mr. Samuel Cooper quotes a remarkable example of this kind from M. Bordier, that happened at Pondicherry:—"An Indian soldier (says Mr. Cooper), angry with his wife, killed her and attempted to destroy himself, by giving himself a wound with a broad kind of dagger in the abdomen, so as to cause a protrusion of the bowels. A doctor of the country being sent for, dissected between the muscles and skin, and introduced a thin piece of lead, which kept up the bowels. The wound soon healed up, the lead having produced no inconvenience. The man was afterwards hanged, and M. Bordier, when the body was opened, assured himself more particularly of the fact."

The instances which I have already cited refer only to lead, or lead and some of its alloys, lying in contact with the living tissues. And some authors, indeed, imagine that this negative property of harmlessness belongs, among the metals, to lead alone. "Bullets of stone (remarks Ambrose Parè), iron, and of any other metallic (than lead)

are of another nature, for they cannot remaine any long time in the body without hurt; for iron will grow rusty, and so corrode the neighbouring bodyes, and bring other maligne symptomes." But the evidence of other metals remaining harmlessly imbedded in living tissues, or passing harmlessly through them, is equally strong. Needles, for example, may, as is well known to surgeons, long remain imbedded in the living tissues with little or no inconvenience. Even when they travel about from part to part from pressure of the muscles, &c., acting mechanically on one or other of their extremities, they produce little irritation in the course of their transit. "If foreign bodies, (says John Hunter) are such as can be made to change their situation by the action of the body upon them, such as pins or needles, or from gravity, as is the case sometimes with bullets, then the parts through which they pass seem not to be much altered or disturbed."

Various other metals, or combinations of metals, besides lead and iron, possess the same negative property of harmlessness; and, indeed, this principle has been taken advantage of in the religious and other rites of some nations. Thus the Rev. Howard Malcolm, in his account of the religion of the Burmese, states: "Amulets and charms are worn by both sexes, but not by a large number, as among Hindus. One of these, common among military men, is the insertion of pieces of gold, or other metal, under the skin of the arm, between the elbow and shoulder." "I was allowed," Mr. Malcolm adds, "by one of the Christians at Ava, to take from his arm several of these. They are of gold, inscribed with cabalistic letters." Some of the Burmese warriors are, observes Captain Yule, in his late work on Burmah, said to retain the practice "of inserting a piece of metal under the flesh to make themselves invulnerable."

Accident is frequently furnishing us with examples of the same law of tolerance of the living tissues for foreign metallic bodies, and that under conditions where two metals are united. For instance, our common tinned iron pins often enough become accidentally lodged in the external tissues of the body, or are swallowed and even traverse different parts of the body without showing much irritation or inflammation along their tract. "In the cattle which feed in bleaching fields, there is not (observes Mr. Hunter) one of these killed without having their stomachs, &c., stuffed full of pins, and no seeming inconvenience takes place, for they appear to be healthy, and fatten as readily as other cattle." Among "the cases that have occurred of persons swallowing pins, needles, &c., they have (says Mr. Hunter) been found to travel almost over the whole body, without producing any effect except in some situations exciting some sensations." Mr. Hunter, in the chapter from which I have made these quotations, is inclined to argue that the same material which will produce little or no irritation, or at the most only adhesive inflammation in the deeper parts of the body, will more and more readily induce suppuration as it approaches the external or cutaneous surface, "external parts (to

use his own words) assuming the suppurative inflammation more readily than the internal."—p. 288. Hence he would expect an abscess to form around a bullet, pin, or needle lodged immediately beneath the skin, although the same bodies would excite no such inflammatory reaction when they were lodged in the deeper structures of the body. But suppuration does not by any means always, or indeed frequently attend the approach of metallic bodies to the surface; pins, needles, and bullets are often extracted by a slight incision through the skin, without a vestige of pus being traceable around them; and when they do, as, indeed, sometimes happens, lead to suppuration, when lodged superficially and subcutaneously, the inflammatory or suppurative action is generally, if not always, the result of compression and damage of the soft tissues lying around the foreign body, these soft tissues being, as the foreign body approaches the external surface, always liable to be contused and injured by every form of accidental outward pressure that impinges upon that surface. In fact, in the harmlessness of acupuncture needles, and, latterly, in the perfect innocuousness of metallic stitches, we have abundant evidence that metallic bodies produce, *per se*, as little irritation when lodged in the skin and mucous membrane, as they do when they are lodged in any of the deeper structures of the body. And, no doubt, Mr. Hunter was far more correct when he observed, "it is probable that these cases of pins, &c., owe their want of power in producing suppuration, not entirely to situation, but, in some degree, to the nature of the substance, METALS, perhaps, not having the power of irritation (inflammation) beyond the adhesive, for when the adhesive has taken place, the part appears to be satisfied."

This great and important practical law of the tolerance of living structures for the presence and contact of pure metallic bodies has been fully expressed by an anonymous writer in the 'Edinburgh Medical and Surgical Journal' for 1827. The observations which this writer made thirty years ago are so apposite to the present inquiry, that I need make no apology for quoting them in full. "It is a remarkable circumstance (says he) that the acupuncture needles never cause inflammation in their neighbourhood. If they are rudely handled, or ruffled by the clothes of the patient, they may produce a little irritation; but if they are properly secured and protected, they may be left in the body for an indefinite length of time, without causing any of the effects which usually arise from the presence of foreign bodies. In one of M. Clocquet's patients they were left in the temples for eighteen days; and in cases in which needles have been swallowed, they have remained without causing inflammation for a much longer period. It appears probable, from the facts collected on the subject, that metallic bodies may remain imbedded in the animal tissues without being productive of injury; and that the property of irritating and inflaming by mechanical contact belongs only to those bodies which are non-conductors of electricity. But farther

experiments are required to substantiate this curious and important law."

The author of the preceding paragraph, though right in his generalisation, is no doubt wrong in his explanation of the facts. Other inorganic bodies, besides the metals, may be lodged with impunity in living tissues; and this, too, though they are non-conductors of electricity. Small pieces of glass, for example, occasionally remain long imbedded in the body in the same way as pieces of metal do. Mr. Hunter, indeed, points out this fact especially. A medical friend of mine has a small piece of glass imbedded in his lip, which has remained there with impunity for upwards of twelve years. I have heard of two or three cases of small pieces of glass lying quietly in the structures of the hand for long periods. An eminent surgeon had for twenty or more years a small piece of coal lying without inconvenience beneath the skin of the leg; and the small particles of carbon left by the explosion of gunpowder and by tattooing are well known to remain in the cutaneous tissues for a long lifetime without producing any irritation or disturbance. The Burmese, according to Mr. Malcolm, bury and carry not only gold, but also "sometimes small gems" under the skin of their arms. In fact, there seems to be a law of tolerance more general than the passiveness of living tissues to the presence in them of metallic bodies; this higher and more comprehensive law apparently being that living structures may endure with impunity the presence of inorganic and even of dense organic materials, provided they are not porous and capable of absorbing and retaining within them the secretions which are thrown out around them.

Before closing these observations on the tolerance of living tissues for metallic bodies, let me add, that in this as in many other instances, when once a general principle is established, we often find that it will serve us as a clue to the explanation of facts of an equivocal character already alleged, but which from their very strangeness, and previous inexplicability, were still regarded with doubt by some minds. For example, we have already seen that one old mode of attempting the radical cure of inguinal hernia was by the "golden stitch, or by encircling the neck of the hernial sac with a permanent gold wire, which wire was left imbedded in situ, and the wound closed over it. The past history of surgery shows that this practice was followed as far as the safety and life of the patient were concerned, with a degree of frequency and impunity which was startling under our modern pathological ideas of the facility with which injuries and wounds of the peritoneum ran on to dangerous degrees of inflammation and death. In the same way these ideas have again been upset in modern days by the new mode of radical cure for inguinal hernia introduced by Wutzer, Rothmund, Spencer Wells, and other surgeons, and which essentially consists in infibulating the hernial sac, and placing and keeping for several continuous days a stitch through this inverted portion of the peritoneal sac. We have proof of the innocu-

ousness of this method of operating in the fact that Rothmund has, it appears, practised the operation now upwards of one thousand times without losing a patient, or seeing one case of fatal peritonitis excited by the prolonged puncture and transfixion of the peritoneum. In all probability the explanation of the comparative safety of both these modes of radical cure of hernia is simply this:—the thread or needle used is metallic, and hence, in accordance with the general law which we have been considering, inflammation is excited by the metallic thread or metallic pin only up to the degree or stage of adhesion. If a silken thread is used for the purpose, then, as shown indeed by the result of Gerdy's experience upon the radical cure of inguinal hernia, the same operation comes to be attended by a higher and far more dangerous degree of inflammatory action.

Law of Non-Tolerance of Living Tissues for the Presence of Dead Foreign Organic Bodies.—When foreign dead organic bodies, belonging either to the animal or vegetable kingdom, are lodged or imbedded in the living tissues, they, as a general law, speedily produce morbid irritation and excitement, and a degree of inflammation which soon terminates in suppuration and ulceration.

In experiments upon the lower animals, pieces of lint-cloth, &c. lodged in the cellular tissue, &c., excite suppurative inflammation, when portions of metal of equal size, lodged in their neighbourhood, and at the same depth excites only adhesive inflammation.

Foreign or dead organic substances are sometimes found lodging in and complicating wounds in the human subject, particularly gun-shot wounds.

The walls of a gun-shot wound along its tract through the soft tissues of the body are often to a greater or less extent killed by the force and blow of the ball, and consequently slough. Whenever a portion of soft tissue is in this way deprived of vitality, and becomes a dead organic substance, it excites in the contiguous living structures suppurative and ulcerative inflammation to such a degree as is necessary for the disjunction and elimination of the dead organic tissue.

When any portion of the soft tissue dies or sphacelates from any other cause, mechanical or morbid, it gives rise in the same way for its separation and removal to suppurative and ulcerative inflammation in the continuous living structures.

The same law holds true in regard to a piece of dead or necrosed bone. Suppurative and ulcerative action is set up in the living tissues around it. When a piece of splinter of bone is struck completely off by a gunshot wound, the lodgment of this separated fragment of bone prevents, sometimes for a long period, the wound from closing, and keeps up constant morbid irritation and suppuration by its presence.

Pieces of cloth are occasionally lodged in the structures of the human body by gunshot wounds, the ball carrying before it and with it portions of dress, &c. The law of the non-tolerance of living tissues for the presence of foreign organic bodies, is strongly illustrated by the

irritation and suppuration to which such imbedded portions of cloth give rise. The fact is one well known in military surgery, and is alluded to by various authors. Thus, for example, Mr. John Bell, in his 'Discourses upon Wounds,' when treating of the circumstances which may impede the healing of a gunshot wound, specially points out, that, as a cause of its slow cure and of its continuous irritation and suppuration, "there may remain some foreign body within the wound; now," he continues, "a ball *never* produces these; a broken and corrupted bone would presently be known by the black colour and fetid smell of the discharge; and if the slow healing of the wound is known to proceed from neither of these causes, then most likely it arises from some piece of *cloth* which has passed in along with the ball."

In the practice of his profession, the surgeon often takes advantage of the same law; for when he wishes the sides of any artificial wound or opening which he has made not to adhere, he knows he can effect this purpose by lodging between the walls of the wound a piece of charpie, or other foreign body; and he is further certain, by maintaining the foreign body in this position for a few days, that suppuration in the walls of the wound will be excited by its presence.

A very small and minute fragment of dead animal or vegetable substance is sufficient, in accordance with this law, to excite suppuration in the living tissues among which it is lodged. Several years ago various eminent surgeons tried for a time the practice of cutting off both the ends of the ligatures with which they had tied vessels in amputations and other operations. The quantity of organic ligature required to be thus left buried in the closed wound around each deligated vessel was extremely small. Mr. Lawrence calculated that the loop of silk thus left around each artery was, perhaps, not heavier than one-fiftieth of a grain; and the weight of flax or hemp thread required was not much more so. But though this vestige of foreign organic matter is not generally sufficient to prevent the union of the wound by the first intention, yet the practice has latterly been almost entirely given up by surgeons because they found that, as a general law, this minute fragment of organic ligature thus left imbedded in in the wound became inclosed in a small abscess, and by its presence gave rise to a slow process of suppuration and ulceration, by which the ligature was ultimately carried out, and discharged from the surface of the body. "By some both ends (says Professor Miller) are cut away; in the belief that adhesion is thus favoured throughout the line of wound, as doubtless it is; and in the hope that the noose will become encysted, and give no further annoyance—as certainly will not happen. Adhesion under such circumstances is a misfortune; for the noose and its contained slough are to all intents and purposes foreign matter; as such their presence will be resented by the surrounding living textures; and as such they will be extruded by suppuration. Sooner or later—often after cure has apparently been

completed—deep abscess forms painfully and slowly, having approached the surface, pus is discharged, and with it, its cause, the noose. Not until this latter has been put forth will the pain and discharge cease.

Long organic ligatures of silk or thread, thrown around bleeding vessels, and left hanging out of surgical wounds, keep up in the same manner by their presence and contact a continuous process of suppuration along their tract; and at the point of deligation the tied artery is cut through by ulceration, before the ligature becomes separated and removed.

Organic sutures formed as suture-threads have hitherto been of silk, flax, or hemp, act in accordance with the same general law of the non-tolerance of living tissue for foreign organic substances, and when left for a short time, always at last excite suppuration and ulceration by their presence.

Indeed, the common organic sutures hitherto used by surgeons do thus so often prove noxious centres and sources of irritation in the lips of wounds as to have led, repeatedly, in the past history of surgery, to their more or less partial or complete rejection from practice. Above a century ago the published observations of Pybrac and Louis led, for a time, to the almost total discontinuance of sutures in closing and keeping in apposition the lips of wounds, whilst the same object was attempted to be obtained principally or entirely by the aid of position, plasters, and bandages. The best surgeons of modern times, while returning again to the moderate use of silk and similar sutures, have very generally acknowledged the irritating and unhappy effects occasionally produced by them, particularly when too long detained. Thus the late Professor Samuel Cooper, in the last edition of a work that was long regarded as a standard exposition of English Surgery, remarks, that it must be allowed that the cause of some wounds not uniting "is entirely ascribable to the irritation occasioned by the sutures themselves."

"Since (he observes) the sutures *always* act as extraneous bodies in the exciting more or less inflammation and suppuration round them, there can be no doubt that their employment is invariably wrong, whenever the sides of a wound can be maintained in contact by less irritating means, with equal steadiness and security. For what is it that generally counteracts the wishes of the surgeon, and renders his attempts to make the opposite surfaces of wounds grow together unavailing? Is not the general cause too high a degree of inflammation, which necessarily ends in suppuration? Are not sutures likely to augment inflammation both by the additional wounds of the needles, and the still more pernicious irritation of the threads, which always act as foreign bodies, sometimes producing not merely an increase of the inflammation and suppuration in their tract, but frequently ulceration or sloughing of the parts; and, in particular constitutions, an extensive erysipelatous redness. More wounds are hindered from uniting by sutures than such as are healed by them."

Or let me quote on this point the author of the last work on Surgery published in this country:—

"Sutures (says Professor Pirrie) should not be employed when it is possible to maintain steady apposition without them. During the first day or two, and before they have cut their way by ulceration through the skin, they certainly act more powerfully than plasters in maintaining coaptation—one of the essentials for obtaining adhesion; but they also irritate much more, and, if not speedily removed, excite, at least in their immediate vicinity, sufficient inflammation to lead to ulceration, preparatory to their spontaneous extrusion, and the vascular action thus set up in one part of a wound, may extend so far as materially to interfere with or prevent adhesion. Even under the most favourable circumstances, a slight suppuration seldom fails to follow in the track of each stitch; and though, when the action stops here, the general healing of the wound may not be retarded, still the greater marking of the cicatrix, at each of these points, is an additional reason for avoiding their employment, when possible, especially on exposed parts. Sutures, then (concludes Dr. Pirrie) are to be employed when there is difficulty in keeping the parts satisfactorily in contact by means of plasters; but they should be as few and far between as consists with the attainment of their immediate object."

In short, Professor Pirrie, like many other eminent surgeons, holds with Mr. Hunter, that plasters have an advantage over stitches, by not inflaming the parts over which they are applied; "and (to use Mr. Hunter's own words) by neither producing in them suppuration or ulceration, which stiches always do."—(p. 257.)

Exceptions to the Two preceding Laws in Surgical Pathology.—In pathology there are many general, but few or no universal laws. The two preceding general laws, like all other general laws in medicine, are liable to more or fewer exceptions, apparant or real. To understand the full practical value of these two laws or principles, let me here state one or two of the more important exceptions to them.

1. The presence of metallic bodies or threads is liable—like the presence of organic bodies or threads—to produce in living tissues absorption, with the formation of pus—or, in other words, suppuration and ulceration—provided it is combined with strong constriction of, or strong pressure upon these tissues. In fact, surgeons have used, as we have already seen, metallic threads in this way, to produce by firm and forced constriction rapid ulcerative absorption in dividing the necks of polypi, or the solid walls of a fistula *in ano*. Here it might seem as if the metallic material excited by its presence, not adhesive, but suppurative and ulcerative inflammation. But this objection to the general law of the tolerance of living tissues for metallic bodies is more apparent than real. For the truth is that the resulting rapid ulceration and absorption in these instances are the result of the mere strong mechanical constriction and pressure of

the living tissues, and quite independent of the agent or material, by which that constriction and pressure are produced. The effect would equally follow, whether the ligatures were organic or inorganic, provided only the physical amount of constriction and pressure made by them upon the involved living tissues were sufficient in degree. But the observation becomes important in another point of view. For it shows us that we must not expect metallic, any more than organic suture-threads to remain quite free from any chances of suppuration and ulceration in their courses or tracks, provided they are so placed in a wound as to drag and press greatly upon the included tissues. The living tissues will only in general tolerate, without suppuration or ulceration, metallic threads, on the condition that they are so placed and so adjusted as not to produce unnecessarily strong tension and traction upon the structures through which they pass.

2. Though in surgery organic threads and ligatures, as a general law, speedily produce, by their presence, suppuration and ulceration in tissues in contact with them; yet there occasionally occur in practice exceptions, real or apparent, to this common principle in surgical pathology. Sometimes, though very rarely, an effusion of coagulable lymph only, and not of pus, is thrown out around the organic threads, or, in other words, its presence for five or six days, or longer, excites only adhesive, and not, as usual, suppurative and ulcerative inflammation. Again, sometimes another result is seen, viz., that when silk or flax threads and ligatures are left in the living structures for weeks or months, they in the first instance excite, as usual, more or less suppuration and ulceration in the tissues immediately in contact with them; but after a time the secretion of pus ceases, the included portion of thread becomes dried and rigid, like a non-porous, inorganic material, and subsequently becomes fixed in its site by effused coagulable lymph and granulations. I have repeatedly seen this series of changes in watching the effects of sutures in the lower animals; sometimes with one loop of suture thread remaining moist and the centre of a purulent collection, and a contiguous thread dried, stiffened, and fixed *in situ* by coagulable lymph and granulations. Similar examples occasionally occur in the human subject. Last year, in a case of complete and extensive laceration of the perineum, I brought the edges of the rent together an hour or two after delivery, by the usual deep quilled suture, and by some superficial stitches in the skin of the perineum, and the mucous surface of the vagina. Three days afterwards, the patient's medical attendant removed the quilled sutures, and the superficial cutaneous stitches; and the reunion of the parts was found complete. I did not see the patient from the day of operating, till three months afterwards, when I was asked to ascertain if there was anything wrong in the vagina. In the posterior wall of the vagina, in the site of the previous laceration, I found, still *in situ*, the two silk stitches, that had been used to bring the mucous walls of the rent into apposition, but which had escaped notice when the other threads were

withdrawn. The embedded loops were dry and arid, and their sites marked by an accumulation of granulations.

Such exceptions, however, by their rarity only prove the extent and importance of the very law of which they thus form occasional variations.—*Med. Times and Gazette, June* 10, 1858, *p.* 625.

176.—ON THE TREATMENT OF ERYSIPELAS.

By Peter Hinckes Bird, Esq., Author of the Jacksonian Prize for 1849, on Erysipelas.

The treatment of erysipelas may be divided into *preventive* and *curative*. The former will include all means which tend to obviate the causes, and prevent the extension, of erysipelas and its allied diseases, the prevalence of which forms a test of the sanitary arrangement of hospitals; in which institutions, unfavourable locality, dampness of the surrounding soil, imperfect drainage, choked sewers, deficient ventilation, cleanliness, and over-crowding, concur for the production and spread of these diffuse inflammations. Hospitals should have large and airy wards for patients to feed, exercise, and amuse themselves; the floors should be dry rubbed, and polished, not washed, for damp favours miasmata; and every precaution should be taken against fomites and infection, by the closing and fumigation of infected wards, the total destruction of all dressings and bandages used, and the substitution of tow, &c., for sponges in the dressing of wounds. Charcoal, hung round the bed in coarse muslin bags and trays of the same placed by the bedside, is well worthy of trial.

The alliance existing between erysipelas and puerperal fever being fully proved, no practitioner can be sufficiently cautious in going from a case of this disease, to a woman in the parturient or puerperal state; the annals of medicine contain fearful and heart-rending evidence of the mortality caused by inattention to this most important fact.

The profession is not now "quite at a loss to discover in this affection those marks of debility which some have so much insisted upon," but believing it to be a disease of debility, that is occurring in an enfeebled constitution, almost universally treat it by stimulants and by the free and steady administration of nourishment: frequent and large doses of brandy, beef tea, quinine, ammonia, chloric ether, &c., should be given, and attention paid more to the state of the pulse, than to that of the secretions. In rural districts, among a hardy and robust population, a more marked imflammatory form will be benefited by purgatives, and slight, but not too lowering antiphlogistics; and an intermediate class of cases will require some modification of treatment; each case presenting its own peculiarities and indications, on which the necessity, and the proper time for the administration of stimulants must depend.

Opiates must be given with great caution—they are contra-indicated

in cerebral congestion and coma; in one case of this kind, death so rapidly followed their administration as to appear to be the cause of the unfortunate event—in these cases the milder preparation of hyoscyamus is to be preferred; but to lessen pain and irritation, tranquillise the system, and procure sleep, they are of much service in the latter stages, and more severe forms of the disease. For this, they should be given in sufficiently large doses to produce the desired effect, small doses only adding to the febrile excitement, and rendering the head more liable to become affected. In cases attended with violent delirium, I have seen the hydrochlorate and acetate of morphia, in grain doses, produce a most beneficial effect.

In desperate cases, with intense coma, and typhoid symptoms, turpentine has produced good results; its purgative action should be decided, otherwise it is apt to cause unpleasant head symptoms; it should be given in doses of ℥ ij to ℥ iv, with one-half or two-thirds the quantity of castor oil.

When diffuse inflammation is spreading down the larynx and trachea, tracheotomy is imperatively called for; indeed it is the only means, combined with the free administration of stimulants, which offers any chance of success.

The experience I have had of the new vaunted remedy, tincture of the sesqui-chloride of iron, is not at all in its favour when compared with alcoholic stimulants, to which it may in some cases be a useful adjunct. It is especially indicated in albuminuria coincident with, or consequent on general erysipelas, of which I have met with three cases.

Cases of chronic erysipelas are very difficult to cure; the local symptoms never altogether disappear, and are apt to become aggravated at short intervals on the least irregularity of diet or from external impressions, and often without any evident cause. In these cases the functions of the stomach and liver are often disordered, and the secretions consequently vitiated; these conditions must be rectified by a course of alteratives, aperients, and tonics—such as iodide of potassium, alkalies and sarsaparilla, preparations of zinc and iron.

With regard to local treatment, I am not aware of any that will cut short the disease; in the uncomplicated variety, collodion, or gutta percha dissolved in benzule, forms an elegant remedy; and in uncomplicated erysipelas of the face, punctures relieve the distention; but the most agreeable application will be found to be that of lard and cotton wool, after relaxing the skin by warm fomentations. In uncomplicated erysipelas of the extremities, a perfect line of nitrate of silver, at least three inches above the line of disease, in nine cases out of eleven proved a sure barrier. Where an interstice has been left, I have seen it creep through, and spread.

In the variety complicated with diffuse inflammation of the cellular tissue, the early use of small incisions when the skin is hard, tense, and resisting, and the pain severe and throbbing, is much to be recommended; the grand object of these should be the prevention, rather

than the removal, of the effects of inflammation; or in other words, they should give exit to blood and serum, rather than pus and sloughs.

From all I have seen and read of this disease, I can discover no argument for delaying, but many for immediately resorting to them; by thus acting and combining frequent syringing with tepid water, and repetition of incisions if necessary, we may be truly "at a loss to name a more valuable accession to the art, of modern date, than that for which the profession stands indebted to Mr. Copeland Hutchinson." M. Chassaignac, of the Hôpital Lariboisiere, drains off the matter by means of India-rubber tubes, perforated at various parts of their length, so as to facilitate the flow of the discharge along them.

In chronic erysipelas, a solution of the nitrate of silver should be frequently applied, or small blisters at short intervals at a little distance from the affected part; occasionally when these fail, an issue in the arm effects a cure.

To conclude then, erysipelas is merely an example on the skin, of that diffuse inflammation, which in other tissues constitutes diffuse inflammation of the mucous membrane, diffuse phlebitis, puerperal fever—all of which have a common origin, a poison in the blood, are infectious and contagious, and may mutually produce each other.

The term erysipelas should be confined to diffuse inflammation of the skin, and subcutaneous cellular tissue.

Erysipelas is best treated by stimulants and support, and when complicated with inflammation of the subcutaneous cellular tissue, by early incisions, which should extend to the depth of the disease.

177.—RIGIDITY OF THE OS UTERI AND ITS REMEDIES PRACTICALLY CONSIDERED.

By Dr. James Gilmour, Physician-Accoucheur to the Liverpool Ladies' Charity.

When the rigidity is confined to the cervix and os uteri, the *vis a tergo* (uterine force) is insufficient to produce dilatation; the pains are inefficacious for the purpose desired; the cervix feels hard like leather; the os may be closed, or if partially open, may be like a ring, thick and resistent, or hot, dry, and undilatable—deficient of the usual mucus requisite in easy dilatation. The pains are frequently very acute, and of a cutting character, and when the os does not yield favourably to the expulsive powers, and the rigidity persists unrelieved, constitutional symptoms set in, such as a febrile condition of system, irritability of temper, anxiety about the result, and, last of all, exhaustion. The whole progressive train of symptoms of natural labour becomes deranged. If the rigid state still continues unmitigated, the parts will become hot and swollen from continued pressure and interrupted circulation; the tenderness may be so great, that the making an examination will produce intense suffering; an offensive

discharge from the vagina, and, it may be, retention of urine, indicate still further mischief. These local and constitutional symptoms may occur before the os uteri has undergone full dilatation; they are the results of the ineffectual efforts of the uterus to force the head through the os, and the longer such a state of things continues, the worse will be the termination.

The first great remedy in rigidity (vaunted by authorities) is *bleeding;* and I do not for a moment deny but that in some *extreme* cases it may be effectual for its removal; nevertheless, I assert that too much stress is placed on this remedy, to the exclusion of others; and of these last, I place tartar emetic in the front rank. Bleeding in cases of rigidity was known to Hippocrates; it was also advocated subsequently by Mauriceau and others, and is so at the present time, especially by Ramsbotham. I acknowledge that in rigidity with a plethoric constitution, and much excitement of the heart and arteries, it may have its advantages, and in rare cases of this kind it may be indispensable; still I have a great objection to deprive the system of much blood at a time when we cannot anticipate the after-occurrences, and know not how much the recovery of the patient may depend on a sufficient supply of this material; every drop of blood may be required for this important purpose. We may have post-partum hemorrhage; for, unfortunately, bleeding in rigidity is not a prophylactic, and will not prevent this dangerous and alarming accident: venesection is a powerful agent, but may be productive of much subsequent evil. It is our bounden duty, in every case of labour requiring exhaustive treatment, so to use our remedies that we may husband the strength for succeeding attacks, of whatever nature they may be, and for the future recovery. The loss of a few ounces of blood might be the stumbling-block to a woman's safety, and, especially in cases of flooding, might put her life in imminent peril. There is, of necessity, more or less blood lost during and after delivery, and we know not beforehand what that quantity may be; therefore we should be very careful in advising its abstraction. Such abstraction, as a rule, leads to exhaustion, when performed in cases of rigidity and protracted labour; and from experience it is well known that a woman is often a long time in making good the blood taken away. Bloodletting is of course inapplicable to cases of disproportion between the head of the fœtus and the maternal pelvis, and also when the protraction depends on deficient uterine action. It is found that bleeding exerts no beneficial effect on the condition of the os uteri, unless sufficient has been taken to produce either syncope, nausea, or exhaustion, the usual sequelæ of large venesections: hence a powerful argument for the substitution of nauseating medicines for the use of the lancet. Dewees remarks that rapid improvement took place always, in several of his cases of rigidity, as soon as sickness or fainting occurred after the bleeding; and Dr. Good makes the important admission that great benefit may be obtained in those cases which he designates as "implas-

tic rigidity," where the parts are rigid, hot, dry, and tender, by bleeding to a *few* ounces, and then followed up by *nauseating* doses of hippo or tartar emetic; the uterus acting with greater freedom, and the os uteri becoming "lax, yielding, and compliable."

A greater caution may be given with regard to the *second* great remedy in rigidity—viz., opium. Here also much discrimination is required, because of the discrepancy of writers. For a long time I have ceased to administer opium in cases of rigidity, and I look upon it as positively injurious. It may allay or retard pain, but even then it may do harm; it has no power of producing relaxation; it may suspend labour when given in large sedative doses, but in cases of rigidity I question the utility of such suspension; the cessation of uterine action is anything but desirable. The relief of pain bears no comparison to the safe conduct of the patient through a rigid, wearisome labour; and, as the late Dr. Ramsbotham justly observes, the effects of opium are not confined to the disturbance of the labour previous to the expulsion of the child, but they are continued and injuriously exerted upon the delivery of the placenta, and that even floodings and other mischiefs arise from its use. It has often puzzled me to ascertain how opium came to be tried at all in rigidity of the os uteri. Burns was greatly to blame in this matter, because, throughout all his chapters on natural and preternatural labour, we find opium recommended in a very unphysiological and empirical manner. His instructions are vague, and, to a person conversant with the true mechanism of parturition, meaningless. An important question here arises: are we justified in suspending labour by a large dose of opium, merely to gain time, in a case of rigidity? *Nous verrons.* I think not, unless under some rare or peculiar circumstances. And, again, it may be asked, shall we leave such cases to nature?—shall we allow nature, irrespective of time, to complete the case unassisted? Decidedly not. This is the reasoning of the dullard, who is slow to embrace improvements in medicine, and who puts implicit faith in the *vis medicatrix naturæ*, forgetting that, in some cases, nature is unable to complete her own work, and that every moment of delay may endanger mother or child. Such doctrine is unsound.

The third, last, but most important remedy used in cases of rigidity of the uterine passages, is the administration of nauseating doses of tartar emetic. Lowder recommended the trial of emetics many years since, founded on the observation, that spontaneous vomiting in labour is generally followed by relaxation of the os uteri; but the remedy gradually fell into disuse, and is not now advocated. Nauseating medicines have long been given in these affections with manifest advantage. We are indebted to Dr. Kennedy, of Dublin, for bringing before the profession the true advantages of tartar emetic, and since that time an occasional paper has appeared in support of his views; but I feel that sufficient has not been written to impress it on the mind of the young practitioner with force and effect. The

natural sickness of labour always has a beneficial influence in inducing relaxation, unaccompanied by subsequent evil, and for the same reason, artificial nausea has a powerful influence in subduing rigidity of the os uteri or vagina, and is so safe in the administration, that it is a well-known fact that puerperal or peritoneal inflammations are rarely seen where tartar emetic, as a nauseant, has been judiciously given; there seems an almost perfect immunity of system from these diseases afterwards. Churchill states that tartar emetic, in rigidity of the os uteri, is "an exceedingly valuable remedy, perfectly safe, and very successful." I have no desire, though I strongly praise the drug, to insinuate that tartar emetic possesses any specific effect on the gravid uterus, similar to that which the older writers attributed to borax or cinnamon, or the moderns to ergot of rye; yet I have often noticed that during its administration uterine action is improved, and the labour accelerated; and there is another striking fact, that where it does not produce either nausea or vomiting (and there are many such cases), I have seen the uterus act with much greater vigour, and the pains become more effectual. This may not depend on any *peculiar* action of the remedy upon the uterus, but may probably be owing to the removal of the resisting force, allowing the uterus to act with greater freedom; nevertheless, I place the idea before the profession, and it may assist future observers.

In thus advocating the exhibition of tartar emetic in cases of rigidity, as superior to any other mode of treatment, I am aware that the doctrine is neither new nor original; but it has not hitherto been discussed in its true physiological and practical bearings. Having used it for more than twelve years with uniform success, I am in a position for soliciting for it a more extended trial, and the more especially so as there is much discrepancy found in authors on the subject. We have the authority of Rigby, that nauseating remedies "do no good, but harm," *contra* Churchill and Collins, who speak highly in their favour. I say here to my young brethren in medicine, that they must not trust implicitly to what they read in books; many of them are truly valuable and trustworthy, but others (and of these there is a large number) are written to suit a purpose, and contain trash. I speak plainly when I tell them to pin their faith to no author's dictum. They must learn to think for themselves; they must strike out manfully, but thoughtfully, in their desire for practical knowledge. If they do this, they will soon discover that many book dogmas are dross, mere stubble —rotten pillars to lean upon in their hour of difficulty.

"To think rightly, is of knowledge; to read with profit, is of care."—TUPPER.

But I digress. Ramsbotham, in writing against the use of tartar emetic in cases of rigidity of the os uteri, states that vomiting is not the *cause* of relaxation of the os uteri, but the *effect*. This may be true, but we frequently have dilatation of the os uteri without vomiting; the latter is not essentially necessary to the former. I

cannot see how his assertion is opposed to the exhibition of *nauseating* remedies. Artificial nausea relaxes the whole muscular system, as well as the cervix and os uteri; it enables the fundus and body of the uterus to overcome the disposition to resistance found in the cervix. I do not assert that vomiting, *per se*, would be judicious in all cases of rigidity, though I have never seen it do harm where it has occurred.

Before giving tartar emetic, I always ascertain that there do not exist certain unhealthy conditions of system, as organic disease of the heart or lungs, &c., which would make me hesitate to prescribe the remedy in preference to some other mode of treatment. Under such circumstances continued nausea might be productive of serious mischief, if not actually of risk to life. Bleeding would be even more hurtful, and our best policy would be a temporising one, to act according to circumstances. Time would be of vast consequence, and we should exercise the most vigilant and diligent attention. As it is not the purport of this paper, however, to enlarge upon this most important complication, I pass it by with the remark, that a *high* dogree of rigidity is seldom connected with any serious organic or debilitating disease.

Although I strenuously advocate the use of tartar emetic in rigidity, yet I am not blind to its injudicious or indiscriminate employment. Galen tells us, "sive purgans dederis sive vomitarium, prima exhibitio in tua potestate est, reliqua sibi fortuna vindicat." However, independent of this caution, I do not know of any drug more easily managed, or the benefit of which to the constitution can be more carefully regulated, or in the exhibition of which less injury is done to the system. At all times great prudence, and much patience as to the result, are requisite; and unless we bear these things in mind, we may be disappointed in its action and benefits in a case of protracted rigidity. In waiting at the bedside for the good result of any medicine, especially upon the uterus, we must not forget the caution given by the late Dr. Gooch, that in tedious labour there is one most important medicine always to be carried about with us, and that is "tincture of time." Calm endurance, without undue haste, is essentially necessary in watching the progress of a lingering labour, and more especially if we are exhibiting medicines to hasten the result.

As regards any particular plan for giving tartar emetic in cases of rigidity, I have only a few words to say. If the rigidity be great, and the patient plethoric, I usually give an *emetic* dose to begin with, and afterwards continue the *nausea* by diminished doses. Symptoms of improvement soon show themselves; the hard and firm cervix and os uteri become thinned and softened; there is increased mucous secretion; the os feels moist, relaxed, and dilatable; and here it may be noticed that, as soon as symptoms of relaxation appear, the labour pains will become stronger, and the patient will bear them with greater fortitude. Though there is increased pain, there is greater hope; the

woman feels that the impediment is being removed, and she suffers in confidence.

Tartar emetic has this great advantage over bleeding, that we accomplish the desired purpose of producing relaxation, and do not deprive the system of blood at a time when it may be imperatively required. If we bleed to exhaustion, there may still be hemorrhage, and most troublesome will then be our management. Again, I have known some of the worst forms of puerperal inflammations to follow after bleeding, but never after the tartar emetic; and we have the great authority of Dr. Lee, who, whilst cautiously recommending bleeding, concludes with this significant remark—"Bleeding is absolutely injurious by inducing debility in the puerperal state." This, I acknowledge, is in direct variance with the experience of Dewees, whose heroic bleedings in America have found few followers in this country, and the practice is now discarded as erroneous, if not dangerous.

It may be thought by some that I write too strongly on the subject, and that I am too sanguine as to the good results. My answer to this is, that the reasons and arguments here adduced are fruits of many years' patient observance of the utility of the method of treatment pursued. In my early days I practised bleeding to a considerable extent, and, although I acknowledge its great power in overcoming the resistance of rigidity, yet I found it highly injurious to my patients' recovery afterwards. I seldom resort to it now. Tartar emetic answers every purpose, and I invariably exhibit it (when necessary) in all cases of rigidity of either os uteri, vagina, or perineum. I have no fear of subsequent inflammatory diseases; I seldom see such a thing as hemorrhage, and I have an inward satisfaction that my patient will pass through the puerperal state in comparative comfort and safety. Blundell talks much about *arte non vi;* but the grand secret is to be able to discriminate with judgment when to interfere and when to abstain.

I believe that tartar emetic has another important advantage over bleeding; and that is, that the parts are better prepared for delivery by instruments, should it be deemed expedient to resort to their use. Tartar emetic has a more peculiar action on the vaginal mucous membrane than bleeding appears to have, giving an increased mucous secretion with greater dilatability. The general relaxation of the whole system from artificial nausea appears to banish many of the symptoms inimical to the use of instruments; irritability of mind especially gives way, and we seldom find our patient pass into that stage of exhaustion so much to be dreaded under the circumstances; the medicine has rather a soothing effect in its constitutional action, producing a sedative as well as a relaxant systemic operation. Though the use of instruments is seldom necessary in cases of simple rigidity, yet, from failure of efficient pains, or from the remedies used being inefficacious, such a necessity will occasionally arise, and it is but right that we

should have a clear perception of how to behave under such circumstances. If the rigidity be confined to the perineum, the lever will be found the better instrument. The propriety of instrumental delivery in rigidity of the os uteri and vagina would form a most interesting subject for examination; but I must, *ex necessitate*, decline the investigation.

[Dr. Gilmour has omitted what we consider the most important and safest medicines to accomplish dilatation of the os uteri, viz., chloroform and ipecacuanha. We have been highly pleased lately with the effects of chloroform. Early in labour, when the pains are regular and the os uteri rigid and small, by slightly influencing the patient with chloroform during almost every pain, the parts become much more rapidly softened and dilated. We have simply dropped a little chloroform on the pillow, near the nose of the patient, and told her to inspire it pretty freely each time, or just before the pain comes on. Instead of waiting six or eight hours for the dilatation of the os, we have thus accomplished it in less than two hours. One grain or two grains of ipecacuanha every half-hour, will have also a good effect; but in a less pleasing way, and not so certainly.—Ed. 'Retrospect.']—*Lancet, Nov.* 13, 1858. *p.* 495.

178.—NEURALGIA AND PARAPLEGIA, SUPPOSED TO BE DUE TO THE LONG-CONTINUED USE OF ARSENIC, OF WHICH A TRACE WAS FOUND IN THE LIVER AND BONES.

By Dr. George D. Gibb, Physician-Accoucheur to St. Pancras Royal Dispensary.

(Read before the Pathological Society of London.)

Mrs. K., æt. 52, a lady of delicate constitution, was the mother of seven children, all of whom died in infancy excepting one boy, who lived to be fourteen years of age. She had suffered for some years from an affection of the skin between two of her toes, under the chin, and in the bend of the right arm; the last, which I saw several times, was chronic eczema. Up to two years and a half ago she was troubled a good deal with chronic sore-throat, and was cured by the topical application of nitrate of silver. The catamenia ceased in June, 1857. The eruption about the toes and the bend of the arm continued to give her much annoyance, and to obtain relief she had been in the habit of taking preparations of arsenic for many years, more or less constantly. The eruptions would improve for a time and then become troublesome; that under the chin disappeared. The arsenical remedies were continued, even without her friends' knowledge, up to the beginning of September, 1857, when for the first time, she had a violent attack of rheumatism on the right shoulder, arm, and scapula. This subsided under treatment, and although there were no inflammatory symptoms, the attack was remarkable for the agonizing nature of the pains.

On the 18th of November, she had an attack of acute neuralgia of the right groin, which suddenly shifted to the left groin, and the left shoulder and side. This varied very much, being sometimes quite relieved, and at other times suddenly returning, and now and then shifting in its character. About the end of January the abdomen became tympanitic, and the right groin very tender, the inguinal glands of this side began to enlarge also. There was no actual indication of disease of the lungs, heart, or uterus, and no abdominal tumour could be felt.

The severe pains, which partook of the character of true neuralgia were looked upon as depending upon irritation resulting from the long-continued use of arsenic, an opinion in which I was supported by Sir James Clarke, Dr. Robert Lee, and more recently, Dr. Copland. Latterly, the pains seemed to be centered in the left hip and groin, together with the left shoulder and side. On the 25th of March, pain was felt along the lumbar spine, and on the 4th of April, she had numbness of her lower limbs and left hip; the pains were now easier from the constant use of morphine, and the abdomen became greatly distended. I succeeded in getting up the long tube on the 7th, but not afterwards, the bowels were with difficulty moved, and only in small quantity, and that generally by enemata. On the 12th, she lost all power of moving the lower limbs, which felt quite numb, although sensibility was perfect; this numbness gradually crept up the back, the abdominal distension became enormous, the urine small in quantity, and scalding, and the enlarged right inguinal glands entirely diminished in a couple of days. Her feet now swelled, and assumed a mottled colour, the powers of life began to flag, she became utterly helpless, and died quietly on the morning of the 23rd of April.

This brief detail gives but an imperfect account of the extent of suffering which was endured for seven months.

All the organs and tissues were submitted to the most rigid and careful chemical analysis for arsenic. The kidneys, spleen, and lungs; heart, bowels, muscle, and nerve; pancreas, diseased glands, and blood, were separately examined, and no arsenic was found. Some of the bones, especially a portion of the spinal column, were dissolved in dilute hydrochloric acid, and then examined, and a distinct trace was found in the bodies of the lumbar vertebræ. The liver was examined three separate times, and a trace of arsenic was detected in it also. Thus the liver and the lumbar spinal column contained traces of this mineral.

Remarks.—This case is brought forward to show that a form of neuralgia will arise from the irritation produced by the long-continued use of arsenic, and although it may after awhile pass out of the system, it still leaves behind it a latent excitability of the nervous system, which will manifest itself on the first favourable opportunity. I did believe, however, that some trace of the mineral would be found in the tissues of the body, and devoted great care to ascertain the

point, and as just mentioned, the liver and spinal column contained a trace of it, a little over seven months after cessation of its use. The forms of arsenic used, were principally the iodide and Fowler's solution. Its deleterious influence would appear to be exerted chiefly upon the abdominal and thoracic glandular system, especially the former.

If the Society agree with me in the correctness of my conclusions, I would be disposed to give the name of *arsenical neuralgia* to this affection, in a similar sense to the employment of the term of lead palsy or lead colic affecting painters.—*Dr. Gibb "On Neuralgia and Paraplegia," &c. London*, 1858.

179.—OZÆNA; OR FŒTID DISCHARGE FROM THE NOSTRILS.

By Dr. Robert Druitt, Licentiate of the Royal College of Physicians, London.

[The fœtid odour in ozæna is dependant on putrid or decomposing organic matter; there are several diseased conditions of the nose attended with these symptoms: in *all*, our local treatment must be calculated to remove or destroy putrescent matter, and unless this be attended to, the disease, no matter what its original cause, may be prolonged to an almost indefinite period.]

What the local treatment should be may be seen from the following case which I have lately treated:—

A young lady, aged 20, consulted me for an offensive discharge from the left nostril, of twelvemonths' duration. It followed a cold in the head, which had been unusually severe, and attended with much pain in the bones of the face. Since that time she had been infested with nauseous taste in the mouth, stuffiness and obstruction of the nostril, and profuse yellow offensive discharge, sometimes streaked with blood. The stench of her breath was most unbearable. There was no tenderness of the nose nor any other outward sign of disease. Her appetite was bad, and spirits low, inasmuch as she felt herself a nuisance to her friends, and her family doctor had pronounced the case one of disease of the bones, and had prescribed some zinc ointment, which had done no good.

I immediately caused the affected nostril to be syringed by means of a large brass syringe, with warm water, to which a few drops of Condy's disinfecting fluid had been added. Several syringefuls were used without any effect or any decrease of the odour; but after persevering a little longer, the patient blew her nose, and expelled a small fragment of yellow putty-like stuff,—consisting evidently of pus, in that state of decay to which the name yellow, or cheesy-tubercular matter is applied. The syringing was proceeded with, and in the course of half-an-hour the nostril was completely emptied of quite a

large quantity of this yellow stuff, the fetor of which was so terrible that it clung to the clothes of those present for some hours. The result was, that the nostril was entirely freed from smell, and although there was great irritation, and the eye was rendered very vascular and swelled, the patient expressed herself greatly relieved, and quite comfortable by comparison.

On the following day the irritation had subsided, and there had been no return of ill odour. There appeared some swelling and excoriation at the anterior extremity of the turbinated bone. A small quantity of very dilute citrine ointment was directed to be put up the nostril with a hair pencil every night.

On the eighth day she called, and reported that there had been no return of the ill odour. This case is a good example of its kind; accumulation of muco-purulent matter, following catarrhal suppuration, and keeping up a diseased suppurating state of membrane by its presence.

Slighter and earlier cases of the same class are very common. An ordinary "cold;" *i. e.* catarrhal mucous discharge from nose, throat, and internal ear is aggravated by a feeble condition of health, or by residence in a damp situation, and is followed by suppuration of one or both nostrils. If the health improves, the malady gets well of itself; or if it comes under treatment early, it is effectually treated without any troublesome local application, as in the following example:

A lady, aged 38, of consumptive family and appearance, consulted me in July, 1858, for offensive discharge from the nostrils, the consequence of a cold that she could not get rid of. There was an immense discharge of yellow muco-purulent offensive matter, and great general debility. She was speedily relieved by bark and nitric acid, ten minims of dilute nitric acid, and an ounce and a half of decoction of yellow bark twice daily; and a visit to Tunbridge Wells completed the cure. Moreover, she inhaled every night the vapour of creosote, ten drops of which were dropped into a large basin of boiling water, so that she might snuff up the steam.

Cases such as these are very common, and very curable by art, if they do not get well of their own accord. But a certain small proportion of them go on to a worse stage; the matter collects and becomes impacted; ulceration follows; and ulceration of the lining membrane of the nose is, as I have ascertained, as a rule, accompanied by the formation of clots composed not only of inspissated muco-purulent matter, but of false membrane. These clots lodge in the nasal cavities; as they increase they give rise to the most painful sense of obstruction and fulness, and it is their decomposition which chiefly causes the horrible fetor of confirmed ozæna. Now on the commonest principles of therapeutics it is evident that the presence of putrescent matter must tend to perpetuate any ulceration, from whatever original cause it may have commenced; and that any plan of treatment which gets rid of this putrescent matter, will afford the best chance of an early cure.

The ordinary history the patient gives is, that in addition to the constant effluvium and nauseous discharge, he passes at times portions greater or less of clot or fleshy matter; that there is increased stuffiness, and often very acute pain just before the accumulation of these things, and some relief, possibly some bleeding afterwards. The sense of smell is generally lost, although that of taste remains.

These symptoms may all be mitigated at once, by the use of a large syringe or India-rubber bottle; by means of which the nose should be resolutely sluiced out with warm water, containing ever so litle of Burnett's or Condy's deodorising solution; and this should be repeated often enough,—sometimes once a week, sometimes twice or three times—often enough to keep the cavity free from discharge, and to deodorise any decomposing surface.

As auxiliary measures the citrine ointment diluted, the vapour of creosote, and other astringents may be of use; and of course such constitutional remedies as may be adapted to relieve any existing cachexia. Bark and nitric acid are my favourite remedies; but the iodide of potassium, cod-liver oil, &c., have their uses.

The sum of the matter is this:—

Ozæna is an accidental complication of any suppurating or ulcerative disease of the nose.

It is the tendency of muco pus to accumulate; and it is the tendency of the mucous membrane of the nose, if ulcerated, to exude flakes and clots of lymph or false membrane, which matters putrefy, and cause the smell.

If these putrefying substances be washed away, and the cavity kept clean, there can be no smell; and this process carried out, as I have described it, makes the patient at once more comfortable, and conduces to the radical cure of the ulcer, no matter what the first origin of that ulcer may have been. The requisite constitutional measures should, of course, be used at the discretion of the practitioner.—*Med. Times and Gazette, Oct.* 23, 1858, *p.* 417.

180.—ON THE CONNEXION BETWEEN THE STOMACH AND ASTHMA.

By Dr. Hyde Salter, Assistant Physician to Charing Cross Hospital.

In no direction is asthma more accessible than through the stomach. Of all forms of prophylactic treatment, none, with the exception of change of residence, is more successful than that which is regimenal. This depends on the close relation existing between the stomach and the lungs. The intimacy of this relation is shown in asthmatics in various ways.

a. Asthmatics are generally dyspeptics. Not that they are apt to suffer from the severer forms of ordinary indigestion, but their stomachs are generally irritable, their digestion capricious and irregular,

and their dietary restricted. It is very rare to see an asthmatic with a perfectly sound, strong stomach, about which he has never to think, and in the history of whose case dyspepsia finds no place. Sometimes the dyspeptic symptoms exist in a very aggravated form, and they are frequently such as to imply that the stomach disturbance is one of deranged innervation; that its sensibility, or its movements, or the nervous superintendence of its secretion, are prevented. In these cases the stomach and lung symptoms are part of one morbid condition; the whole thing is deranged pneumogastric innervation, the dyspeptic symptoms being the manifestation of the gastric portion of this deranged innervation and the asthma of the pulmonary.

b. Another way in which this connexion of the stomach with asthma is shown is, the frequency with which attacks of asthma may be traced to errors in diet—a debauch, a late dinner, a heavy supper. In many asthmatics the most scrupulous care is necessary in all that relates to food, and a late dinner or a heavy supper would at any time infallibly bring on an attack.

c. Another illustration of the same fact we see in the tightness of breathing that, in some persons with asthmatic tendency, follows every meal: as certainly as food is taken, so surely, in an hour or two, does tight, dry, asthmatic oppression succeed. During an attack of asthma this tendency of food to embarrass the breathing is very much exalted, so that the sufferer is obliged absolutely to starve as long as the attack is on him. As the appetite is not affected in asthma, this starvation adds greatly to the sufferings in this disease; but the intensity of the exacerbation of the dyspnœa that follows the taking of even a small portion of food is so terrible that the craving of hunger is willingly endured. I have known more than one case in which, at each attack, the patient dared not suffer a particle of food to pass his lips for thirty-six or forty-eight hours. In one of these cases the attacks were weekly, and the patient had to starve himself from an early dinner on the day previous to the attack to breakfast on the day succeeding it.

d. Another example of the same thing may be recognised in those gastric symptoms that are so often premonitory of an attack, that constitute, in fact, its first stage—flatulence, hiccough, and such like.

In all these ways, we see this one fact,—that there exists between the state of the stomach and asthma a very close connexion. From this fact we draw, on the one hand, instructive pathological teaching, and, on the other, important practical rules. To these practical rules let me now turn.

One of the most important rules to be borne in mind in the dietetic treatment of asthma is the *time of day* at which food is given. The following case very well illustrates this point, and also the part that sleep plays in favouring the induction of asthma by food:—

A youth, residing in the country, had been subject to asthma from

childhood. When quite young he ate and drank like other children; but as his malady became more severe, he found that his attacks depended very much upon his previous day's eating; indeed, that that was the one circumstance which regulated them. If he ate late in the day (in other words, went to sleep soon after taking food) he was sure to be awoke the next morning at four or five with his asthma. At first he was obliged to give up suppers, and to make an early tea his last meal; then he was obliged to give up even that, and take nothing after an early dinner. He might drink, but could take no solid food. And for years two o'clock was the latest time at which he could with impunity suffer solid food to pass his lips. He made a good breakfast at eight o'clock, always taking some animal food, and a good dinner at two, and from that time till eight o'clock the next morning he never took a mouthful. In this way he managed, in a great degree, to keep his disease at bay; but if he ever transgressed he knew the penalty he should have to pay, and which inexorably awaited him the next morning. He had a very good digestion and a ravenous appetite, and as evening advanced his hunger became so great that it amounted to a craving almost irresistible, but he dared not gratify it. Sometimes, not daring to trust himself, and yet knowing the painful price at which he would transgress, he used to make *vows*, that it might be impossible for him to eat. But on the rare occasions on which he yielded to temptation and ate supper, it was never till he had been asleep an hour or two that the dyspnœa came on; and if he did not go to sleep—as for example, if he stayed up dancing half the night, or sat up reading, or took a very long walk—the asthma did not come on at all.

This gentleman has of late years almost completely lost his asthma; but if ever he gets it now it is after eating late the previous evening; a late dinner party, or a supper, is always the *corpus delicti*. By going to bed later than usual, however, and thus throwing a certain number of hours between taking food and sleep, he is able to render his dinner or supper innocuous; so, when he has been dining or supping out, he sits up a little later than usual, and no harm comes of it. He knows by his feelings when digestion is over and his stomach empty; and then he may go to bed in safety.

The simple explanation of these phenomena is this: The taking of food (either by its mere presence in the stomach, or by the process or results of digestion) acts as an irritant to the morbidly-irritable pulmonary nervous system. The affair is excito-motory; the food is the immediate or remote irritant, the nervous circuit involved is the pneumogastric, and, perhaps in part, the sympathetic; and, in obedience to the common law of reflex action, the potency of the stimulus is increased, or, in other words, the nervous irritability is exalted by the condition of sleep. I need hardly recall to my readers' minds analogous phenomena in various diseased conditions—the frequency with which epilepsy affects the hours of sleep, or that debatable land

between sleeping and waking; the restriction to sleep of the cramps and jactitations of those whose systems are impregnated with lead, and which cease the moment the sufferer from them is broad awake; the grinding of the teeth in children affected with worms, and various other similar phenomena. So, in the case of asthma, the food may be in the stomach, but unless the will is suspended and excito-motory action exalted by sleep, no results follow.

Now, to what does all this practically point? To the simple rule, which of all the dietetic treatment of asthma is the most important—*let no food be taken after such a time in the day as will allow digestion being completed and the stomach empty before going to bed.* Of course the time at which the last solid food should be taken will depend upon what the bed-time is; if ten or half-past ten, I would say let three or four be the dinner hour; after that take no solid food, or a mere scrap of bread-and-butter at tea. But I would rather insist on no solid food whatever being taken. As the day advances, digestion becomes less energetic and rapid, and I am sure six hours is not too long to allow between the last meal and bed-time; a dinner is not got rid of so rapidly as a breakfast. Moreover, the digestion of asthmatics is often very slow.

But the rapidity of digestion, and therefore the time after dinner that sleep may be safe to the asthmatic, will depend upon two other circumstances—the *quality* of the food and its *quantity;* and these are two very important points.

With regard to the *quality* of the food there are two kinds of articles of diet that should never be given to the asthmatic—those that are *generally* indigestible, and those that are *specially* provocative of asthma. For though, as a rule, it may be said that the foods that are found to be the most disposed to bring on asthma are those that are the most generally indigestible, yet there are some articles of diet that appear to have a special disposition to induce asthma quite out of proportion to, and in excess of, their general unwholesomeness.

With regard to the first, we should act upon the same rules as we should in ordinary indigestion; the food should be plain, well cooked, and containing the proper proportion of animal and vegetable elements. I am sure it is a mistake in asthma, as in other diseases in which it is desirable to give a peculiarly digestible aliment, to cut down the diet to too rigid and monotonous a simplicity—bread and mutton-chop, bread and mutton-chop, in eternal repetition. The stomach of man requires a certain amount of variety, and wearies of, and refuses to digest pleasantly, anything, no matter what, that is offered to it incessantly over and over again. Bearing this in mind, and bearing in mind that as the asthmatic only eats twice a-day, his food should be as nutritious as possible, the diet that I should prescribe as the best in a case of asthma would be, in detail, something as follows:—

For breakfast, a small basin, or breakfast-cup, of bread-and-milk, and besides this, an egg (two for a strong man with a good appetite),

or a mutton-chop, or some cold chicken, or game. As a drink, if any is required besides the bread-and-milk, I think tea is better than coffee, cocoa better than tea, and milk-and-water better than either. For dinner (not before two nor after four o'clock), let mutton be the staple meat, beef or lamb but rarely, pork or veal never. A little succulent vegetable and potato should be taken, and a little farinaceous pudding, or stewed fruit, or the fruit of a tart, should conclude the dinner. Only one helping of either meat or pudding. I believe, unless there is some special reason to the contrary, that water is the best accompaniment to an asthmatic's dinner. No cheese, no dessert. A great sufferer from hay-asthma tells me that a little boiled fish and brandy-and-water have the least tendency to bring on his asthma of anything he can take; he can take this when a dinner of butchers' meat would be certain to be followed by difficult breathing. With regard to the brandy-and-water I will not speak positively of its advantages in *hay-asthma*, but in ordinary asthma I do not like stimulus of any kind. With regard to the fish there can be no doubt that it is less of a diet, yields more readily and rapidly to digestion than butchers' meat, and is, therefore, less provocative of any evil depending on prolonged and laborious digestive effort. And here let me observe that butchers' meat is of all foods (with the exception of those particular articles of diet which are specially offensive to asthma, and to which I shall refer presently,) that which is most apt to aggravate asthmatic dyspnœa, and it is because dinner is a meat dinner that it is necessary to take it so early. From any occasional late meal that convenience, or circumstances, may force upon the asthmatic, butchers' meat should always be excluded.

And now let me say a word or two about those particular articles of diet that have a special tendency to oppress and tighten the breathing of those liable to asthma. They are not the same in all cases; but those that I have found have this tendency most commonly are the following:—Anything in any way *preserved*, especially if strongly impregnated with antiseptics, whether condimentary or saccharine, such as potted meats, dried tongue, sausages, stuffing and seasoning, preserved fruits, such as one gets at dessert, as preserved ginger, candied orange-peel, dried figs, raisins—especially almonds and raisins (a vicious combination.) Cheese is bad, especially if old and decayed; nuts are worse. With regard to cheese, I remember hearing an asthmatic remark, that there was "as much asthma in a mouthful of decayed Stilton as in a whole dinner." Meat pies are very "asthmatic," and so, in a peculiar degree, for some reason or other, are beefsteak-and-kidney puddings. I have known more than one asthmatic condemn them as being very bad. Coffee, although of great benefit in some cases as a stimulant, is, from its indigestibility, especially if taken strong and with sugar, so bad for asthma, that it deserves to be classed among its special provocatives. I know the case of a gentleman whose dinner making him asthmatic or not

entirely depends on his taking, or abstaining from, the customary post-prandial cup of coffee. Heavy malt liquors, especially those containing a good deal of carbonic acid gas, as bottled stout and Scotch ale, are of all drinks the worst for asthma.

It will be seen that almost all the above fairly belong to the category of "unwholesomes." I believe their indigestibility depends on their impregnation with antiseptics: that which makes them "keep" *i.e.*, opposes putrefaction—out of the body, opposes digestion in the body. The asthmatic should never touch one of them.

But the *quantity* of food taken at a time is also very important. When asthma is brought on by eating (especially if it comes on independently of sleep), it is almost always after a large meal: a heavy dinner will inevitably be followed by asthma, when a light dinner of the same articles of diet, and at the same time of the day, will as certainly not. And why is this? It is a very general belief that the true explanation of this is a mechanical one—that bulk of food induces asthma by pressing upon the lungs through the diaphragm, and preventing the descent of the one and the expansion of the other. I do not believe this. Much less do I believe that the disposition of food in general to bring on asthma independent of its bulk, the tendency of recumbency to induce asthmatic breathing, and the relief that follows an emetic, have the same mechanical explanation, as is so commonly believed. I believe that a bulky meal is an asthmatic meal because it is an indigestible meal; and it is an indigestible meal in two ways—because the demand on the powers of digestion will of course be in proportion to the quantity to be digested, and because beyond a certain amount increase of bulk of food directly diminishes digesting power by over-distending the stomach, and so paralysing its movements, and by being altogether in excess of the secreting powers of the gastric mucous membrane. If the mechanical were the true explanation of asthma coming on after meals, the tendency of food to induce it would be in direct proportion to its bulk, but such is not the case. An asthmatic may fill his stomach with arrowroot and gruel to any amount, but he will have no asthma; he may drink water *ad libitum*, but he will have no asthma. Moreover, in most cases, asthma does not come on immediately after finishing a meal, when its bulk is greatest, but an hour or so afterwards, when it has already been considerably reduced in bulk by the absorption of the more fluid portions of it. Again, the relief by an emetic is clearly not mechanical, as it comes on the moment the nausea is felt, before any vomiting has taken place; moreover, it relieves even when the stomach has been previously empty, and contains nothing to be vomited.

But although I cannot accept the mechanical explanation of the relations of food to asthma, yet, for the reasons that I have mentioned, the tendency of food to induce asthmatic dyspnœa depends very much upon its bulk. An asthmatic's meals should therefore

always be compact and small. As a corollary to this, they should be of highly nutritious materials, for if he eats but little, that little must, for adequately maintaining the nutrition of the body, be rich in plastic materials; while, for the reasons I have before mentioned, they should be very plain and digestible. We thus get the three qualities essential to the diet of the asthmatic—that it should be small in quantity, highly nourishing, and of easy digestion.

It is less necessary to bear these rules in mind at breakfast than at any other meal; indeed, at breakfast, the asthmatic may do pretty much as he likes. I have known asthma brought on by every other meal, but I never knew it brought on by breakfast: I have never known breakfast followed by even that slight straitness of breathing (without any decided attack) that so commonly follows the taking of food in asthmatics. The tendency of eating to induce asthma is in direct proportion to the lateness of the hour at which the food is taken: it is slight after luncheon, worse after a late dinner, worst of all after supper; but breakfast seems entirely free from it. I do not see any reason to believe that this depends on any increased disposition to asthma as the day advances, but rather on the diminution of digesting power which the stomach experiences as its resources are exhausted by succeeding meals, and which requires a night's rest for its restoration.

Breakfast is therefore the great meal for the asthmatic, and as he may at that time eat what he likes with impunity, and has had a long fast from the previous day's early dinner, he should eat as much as his appetite prompts him to, and of the most nutritious materials. He should take this opportunity, too, if any, of gratifying his palate, as the chances are that nothing he takes at breakfast will disagree with him. Of course there is a limit to this latitude, and of course his food should not be so indigestible as to become innutritious. Since, too, the interval from an early dinner one day to breakfast the next is so long, it is advisable that the breakfast hour be as early as possible; if the asthmatic rises at seven, let him breakfast at eight.

The rules, then, for the dietetic treatment of asthma, and the reasons for them, may be summed up as follows:—

1. The tendency of food to produce asthma is greatly increased by the state of sleep; therefore, nothing should be taken after such a time as digestion and absorption may be completely over in,—the stomach and small intestines, and even the lacteals, quite empty,—before bedtime.

2. This long fast before sleep involves a long period of inanition; therefore the asthmatic should break his fast early and heartily.

3. The quantity of food the asthmatic takes should be small; therefore it should be highly nutritious.

4. As a rule, the tendency of food to produce asthma is in direct proportion to its general indigestibility; therefore the asthmatic's diet should be of the simplest and plainest kind.

5. But there are some articles of diet that have a special tendency to produce asthma; therefore from these the asthmatic should exercise the strictest abstention.

[This paper was not published in time to be placed with the other articles on the same subject at pp. 51—73 of this volume.]—*Lancet*, *Nov.* 6, 1858, *p.* 470.

181.—ON DIPHTHERIA.

By Dr. Charles D. Kingsford, Clapton.

Diphtheria may be divided into the *mild* and the *severe* forms.

The mild form, which, for the sake of distinction, may be designated the *diphtheritic sore-throat*, is ushered in by a variable amount of feverishness, loss of appetite, and at first only slight pain in swallowing; the tongue presents a thick, white, creamy coat, through which some of the papillæ are visible; the velum palati, uvula, and pharynx are of a bright-red colour; the tonsil glands are much swollen and of the same livid hue, and upon the inner side of one or both of them distinct white patches are seen, which in some instances resemble an exudation from the sulci of the tumid gland, but more frequently are flat and filmy in appearance, not confined to the tonsils alone, but spread over the uvula and posterior wall of the pharynx: both the exudation and the filmy deposit adhere tenaciously to the submucous surface, and cannot easily be scraped off. Ulcerative stomatitis not rarely precedes and accompanies this mild form of diphtheria,—indeed, by some, they are considered to be identical; the parotid and submaxillary glands are not much swollen, although one or two enlarged glandulæ concatenatæ may often be detected.

The severe form, or *genuine diphtheria*, is always characterized by a high state of fever, a hot pungent skin, flushed countenance, congested lips, a rapid feeble pulse, great difficulty in swallowing, and hurried respiration; the tongue is covered by a thick, dirty, yellowish-brown, or sometimes slaty-coloured coat; the velum palati, uvula, and pharynx are of a deep, dusky, *erysipelatous* redness; the tonsils usually enormously swollen and of the same dark-red colour, but instead of the white patches observed in the mild form, a large ash-coloured membrane is spread over the inner side of one or both tonsils, and also upon the uvula and posterior wall of the pharynx. As the disease advances, the above symptoms increase in severity: the breathing becomes stertorous from mechanical obstruction; deglutition so painful that young children will refuse to swallow even liquids; the saliva dribbles from the mouth, and a foul, acrid discharge often flows from the nares; the pulse becomes more rapid and feeble; the glands of the neck are now swollen and tender, and the voice is hoarse and indistinct; the patient, restless, tosses about in the bed, or else lies on his back in a semi-comatose state. These cases, when fatal, terminate either by rapid prostration of the vital powers, or by an affection

simulating croup, from extension of the diphtheritic membrane into the air-passages; in both instances, death is usually preceded by obstinate vomiting, probably the result of inflammation or irritation of the par vagum.

The prognosis must, at all times, be very guarded, but will depend much upon the disease being from the first recognised and energetically treated; for the mild form, if left alone or improperly handled, will quickly pass into genuine diphtheria, when the prognosis becomes more unfavourable, although modified by the duration of the disease, and the age and temperament of the patient.

The treatment is divided into constitutional and local, and varied according to the severity of the case. Even in the mild form, or diphtheritic sore-throat, it will be found advisable, in the first instance, to confine the patient to bed in a well-ventilated room; if the bowels be sluggish, a brisk calomel purge should be given, but under no circumstances should any other antiphlogistic measure be resorted to, but a liberal diet at once enjoined, consisting of strong beef-tea, port wine, jellies, and farinaceous food, which ought to be administered at short intervals, and in moderate quantity. The following draught to be taken every three or four hours:—Chlorate of potass, from ten to thirty grains; dilute hydrochloric acid, ten to thirty minims; decoction of bark or water, half an ounce to an ounce. The dose of the salt and mineral acid to be increased according to the age of the patient. The topical treatment consists of sponging the fauces, two or three times a day, with the compound solution of alum (L. P.), by means of a piece of soft sponge attached to the end of a pen-holder, or portion of whalebone; the patient also, if not too young, should gargle frequently with a strong solution of alum. The speedy removal of the white patches, by this local application of alum, renders highly probable the suggestion that the deposit is a fungus.

In treating the severe form, or *genuine diphtheria*, it is most important to guard against being misled by the feverish excitement, and thereby be induced to adopt antiphlogistic remedies. It should be borne in mind, that the fever is the result of a poison analogous in type to adynamic erysipelas; and as it would be unwise to treat the latter disease by lowering the system, so would any depleting means, for the purpose of reducing the fever attending diphtheria, be fraught with danger. The pharynx should be sponged every eight hours with a solution of lunar caustic (sixteen grains to an ounce of distilled water), and for this purpose the sponge, by being easily compressed between the swollen tonsils, will be found preferable to a brush. A most liberal allowance of wine and nutritious diet must be instituted from the first, and the following draught:—Chlorate of potass, from ten to thirty grains; tincture of sesquichloride of iron, ten to thirty minims; syrup, a drachm; water, seven drachms; given every one, two, or three hours, according to the age of the patient and the degree of pyrexia present; the more intense the inflammatory symptoms, the

oftener should the draught be exhibited; nourishment also should be given in definite quantities at short intervals. It will happen, not unfrequently, with very young children, that *some time* before the mechanical obstruction precludes deglutition, all voluntary efforts at swallowing will be obstinately resisted, from pain, and disinclination to be aroused. These cases excite the greatest anxiety, as unless a sufficient quantity of support can be taken, the vital powers must quickly succumb to the influence of the poison. Still all attempts to give medicine or food by the mouth should now be discontinued, and an enema of strong beef-tea and port wine (one ounce of each), be administered, per rectum, *every two hours;* also, for a child above three years old, five grains of quinine should be added to each alternate injection. At bed-time, to procure rest, it may be advisable to add five minims of Battley's sedative. The glysters may be thickened with arrowroot; and, at intervals, milk substituted for the beef-tea and wine. The quantity injected should never exceed two or three ounces at a time (or it will fail to be retained); and hence the necessity for the frequent repetitions. The topical application of the nitrate of silver must be persevered in, and the patient allowed to sip any nutriment he will. By adopting this procedure, time is gained, and life maintained until the virulence of the poison is overcome or exhausted. Mercury, in any form, excepting as a cathartic at the onset of the disease, seems to be especially contra-indicated. Blistering and external stimulants to the neck are worse than useless, by adding to the irritability of the sufferer, without exercising any beneficial or derivative effect upon the fauces.

Tracheotomy, if entertained, should be adopted immediately after the croupy symptoms have become established, and not deferred as a *dernier ressort.* The presence of vomiting I should consider sufficient proof that the disease had already advanced too far to warrant any hopes of success from an operation.

It will be observed that the plan of treatment above advocated is based upon that of two analogous affections—viz., ulcerative stomatitis, and acute asthenic erysipelas of the head and neck,—viewing the mild form of the disease as allied to stomatitis, and therefore prescribing the chlorate of potassa with the mineral acid; but regarding diphtheria as a complication of diphtheritic sore-throat with erysipelas, and hence ordering, in addition to the salt, large and frequently-repeated doses of the sesquichloride of iron.

The question of infection is very difficult of solution, yet the rapid spread of the malady in schools, and the recorded deaths of several members of a family from this disease, render it imperative that every precaution be used to prevent its dissemination. In some cases, I have most conclusively traced the origin of the disease to emanations from putrid, stagnant ponds and sewers.

When the affection of the throat assumes the malignant or putrid type, which is recognised by a livid, gangrenous appearance of the

tonsils, and by an intolerable fœtor of the breath, the treatment recommended for general diphtheria, with the addition of a gargle consisting of one drachm of liquor chloride of lime and eight ounces of water, will be found most serviceable.

A very serious complication occasionally arises as a sequela to the severe form of diphtheria—viz., paralysis of the muscles of the neck, of the pharynx, and of the larynx. Dr. Gull, who has already drawn attention to this subject, informs me that he has met with a case in which the upper extremity was involved; and this morning I was consulted by Mrs. C., who was recovering, not only from loss of speech and of deglutition, but also from partial blindness, and paralysis of both arms, the result of this formidable complaint. These cases are to be treated upon tonic principles, by change of air, and those remedies which are calculated to improve the general health. The nervine tonics are especially indicated. When the head falls forward upon the chest, from paralysis of the spinal accessory nerve and cervical plexus, great relief and comfort will be afforded by a collar of soap plaster spread upon leather. Also when, from paralysis of the glosso-pharyngeal nerve, the efforts to swallow are attended by violent fits of choking, all medicines and a large proportion of nourishment must be administered per rectum. Even under the most favourable circumstances, recovery will be slow and gradual; but when the phrenic nerve is implicated, the greatest danger to life is threatened.

In fatal cases the *post-mortem* examination reveals the ash-coloured membrane spread over the pharynx, extending into the posterior nares and down the œsophagus; but when death is preceded by symptoms of croup, it is found also in the larynx and trachea. Upon detaching this membranous exudation, the sub-mucous surface presents an ecchymosed appearance, but no distinct signs of ulceration.

In conclusion, I would most strongly urge the importance of injections in the treatment of the severer forms of diphtheria; nor ought they to be delayed until the patient is unable to swallow, but administered as soon as he ceases to take a sufficient quantity of nourishment. I would likewise beg to add my conviction, that if a sthenic plan of treatment were adopted from the very commencement of an attack, the mortality from this now much dreaded affection would be greatly reduced.—*Lancet, Nov.* 6, 1858, *p.* 484.

182.—*On Anæsthetics.* By Dr. R. M. Glover, F.R.S., Edinburgh, L.R.C.P., London.—On the whole, as far as our knowledge goes, the only anæsthetics likely to be of permanent use, are ether and chloroform. Many have proposed the use of a mixture of the two, and different proportions have been recommended. Mr. T. H. Wakley has been in the habit of using equal parts, and having tried this proportion, upon the whole, I am inclined to prefer it. The substances readily unite in that proportion, the mixture can be inhaled as easily

as chloroform, and the combustibility of the ether is diminished by the union. The after-effects, too, appear to be less permanent than those of chloroform. With regard to this point, amongst the after-effects of the last-named body, M. Chassiagnac has described what he terms an anæsthetic shivering ,which occurs in some after the chloroformization, and which may go on into a progressive, and even fatal coldness, if the surgeon does not struggle early and energetically against this fatal tendency. He also observes: "In certain patients the action of chloroform has consecutive effects not far removed, but which nevertheless, do not produce their peculiarly dangerous consequences until about sixteen, twenty-four, or forty-eight hours. It would seem in these cases, that the injury done to the vital forces by the chloroform has been so profound that the patient could not recover from it." He succumbs from the stupor and prostration. This chiefly occurs in the old and debilitated. Now in such cases, the admixture with ether seems less likely to be injurious; and all facts tend to prove the inhalation of chloroform to be more dangerous than that of ether.

With regard to inhalers, Dr. Snow was, as is well known, a strenuous advocate for their use; but deaths have occurred where his own inhaler was used, and in his own hands. My own opinion is, that the simple nose and mouth-piece, with a perforated plate and a sponge, is all that is required. The chloroform can be poured very gradually on the plate, and we have seen that very small quantities of chloroform have produced death, and very large quantities been given with impunity. The great practical guide is to watch the patient, the pulse, but above all, the respiration.

The various attempts at resuscitation, tried in cases where chloroform seemed likely to produce fatal effects, or where the respiration and circulation have ceased, have been mentioned, and the slight success which has attended them. In 'The Lancet' of February 7th, 1857, will be found a case, in which, after an operation for tenotomy in a boy four years old, the boy being apparently lifeless, artificial respiration, performed in the ordinary mode, having been tried in vain, Marshall Hall's Ready Method, with sprinkling of cold water and the application of ammonia, were attended with success.—*Lancet, Nov.* 6, 1858, *p.* 470.

183.—ON INJECTIONS IN GONORRHŒA.

By Professor Sigmund.

Professor Sigmund of Vienna, as the result of his extensive observation in this class of diseases, is decidedly in favour of the employment of injections in the treatment of gonorrhœa. He believes those who have derived no benefit from their use, or who have observed mis-

chievous consequences from this, have, in the great majority of cases, employed them improperly. He has tried injections with balsam of copaiba, and with chloroform, but has given them up as unpractical, and those made with the patient's own urine, while taking balsam copaiba, were found to be as inert as water. From among a large number of substances tried, he confines himself now almost to sulphate of zinc, acetate of zinc or lead, alum, and tannin; and of these he prefers the sulphate of zinc to all others, because the great majority of patients are cured by it; it acts mildly, neither soiling the linen, nor changing the colour of the urine, and it is very cheap.

For injections to succeed they must be used at the proper time, in a suitable dose and manner, and they must be continued sufficiently long. The period for their employment has arrived as soon as the inflammation of the mucous membrane of the urethra has become subdued; but they should not be used as long as there is present considerable swelling, great, or even slight, if continuous, pain, spasms, or frequent calls to pass urine. The dose of the material should be small, as five grains to the ounce of extract of lead, one quarter of a grain of nitrate of silver, one grain of sulphate or acetate of zinc, &c. It is seldom necessary to increase the original dose. The addition of anodynes, as opium, hyoscyamus, &c., has no advantageous effect. We should carefully teach the patient how to use the injection; and a small tin syringe, with a conical tube, is to be preferred. It should hold at least two drachms. The patient should be placed in the upright position, and should pass urine prior to the injection being thrown in. The tube must be so passed into the urethra, that no fluid can flow out between the canal and the tube. The fluid is now to be slowly thrown in, and then the mouth of the urethra is to be kept closed by two fingers, so that nothing can pass out during two or three minutes. Two injections are to be thrown in one after the other, and they are to be repeated three or four times daily. The injections should not be thrown in just before going to sleep, as they then sometimes give rise to seminal discharges. They must be persevered in for eight or ten days, after all traces of diseased secretion have ceased to be visible, even in the morning. The average time required will be from twenty-one to twenty-eight days. Internal means may also, if desired, be employed, and balsamic medicines in many cases hasten the cure.

Dr. Sigmund rarely has recourse to caustic injections, as the nitrate of silver, sulphate of copper, chloride of zinc, &c., because generally the experiment is dangerous. He limits their use to simple, uncomplicated gleet, which has resisted the usual means, as also to recent gonorrhœa without inflammation occurring in persons who have already employed the treatment with advantage.—*Schmidt's Jahrb.*—*Med. Times and Gazette, Nov.* 6, 1858, *p.* 478.

184.—*Treatment of Tænia.*—There are few circumstances more discouraging to the zealous cultivators of therapeutic science, than the so frequent introduction of new and much vaunted remedies, which prove on fair trial not to be so good as the old ones they had temporarily displaced. A woman, who is attending at the Ophthalmic Hospital, on account of an irritable form of ophthalmia believed to be connected with tape-worm, came under our notice the other day. In the first instance large portions of the beast had been got away by the old turpentine and castor-oil draught. Then kousso had been prescribed, and the woman had taken four doses of this remedy (obtained from Allen and Hanbury's) without any effect. The symptoms continuing kameela was now prescribed, and large fragments were again obtained. We should not mention a single case of this kind, were it not that a strong impression is entertained by several hospital physicians of large experience, that it is not an exceptional one, but quite in accordance with rule. We have been assured by one gentleman, whose facts we hope very shortly to be enabled to record, that not only is the kousso inferior in vermifuge properties to kameela, but that both are wholly put in the shade by the old-fashioned oleum filicis maris. The latter he regards as a true vermicide, whilst of the kameela he believes that its properties are merely those of a brisk purgative, and that it is consequently only a vermifuge.—*Med. Times and Gazette, Oct.* 23, 1858, *p.* 421.

185.—RELATIVE VALUE OF THE DIFFERENT ANTHELMINTICS IN THE TREATMENT OF TÆNIA.

(Cases under the care of Dr. Peacock.)

The following is a brief summary of a series of cases in which different anthelmintics had been employed against tapeworm. The patients were all treated by Dr. Peacock, in the out-patients' department at St. Thomas's Hospital, and we are indebted to him for access to the detailed notes upon which the statements are founded:—

As a general result of his experience both in public and private, Dr. Peacock states that he gives preference to the oil of male fern before all other remedies, and that he holds the kousso in very light estimation indeed. It appears that of the hospital cases respecting which notes have been preserved, the fern oil was given in thirty-five. Of these, in sixteen no other remedy had been previously tried, and in this group the result was always satisfactory, the animal being expelled in a dead or dying state. In seven cases the oil was given after the partially successful use of kousso, and in all these more of the worm was brought away. In three, after partial success by pomegranate bark, the oil brought away other portions of the parasite, and in one a like result was obtained after the use of the turpentine draught. In six cases in which the oil was used, either the result

was not satisfactory, or the patient did not attend again. The dose of the oil given was from half a drachm to a drachm and a half to children, and from a drachm to three drachms to adults.*

The cases in which the kameela was given are seven. In five of these no other remedy had been previously tried, and in all these portions of worm (generally quite alive), were expelled. In one the expulsion of worm was caused after kousso had been tried without effect, and in the fifth, which was under similar circumstances, a like negative result followed its use also. In two cases after the successful employment of the kameela, the oil of fern was employed without procuring the expulsion of any more of the worm. The dose of kameela prescribed was from half a drachm to a drachm for children, and from one to three drachms for adults.

It would from the above facts appear that kameela is more efficient than kousso, but that it must rank as a vermifuge rather than a true vermicide. After the fern oil the animal is usually voided dead. An important statement with regard to the comparative value of kameela is made by Mr. Henry Callaway, formerly of Finsbury-circus, but now a medical missionary amongst the Zulus. The kameela is the native remedy among the Aborigines; but in a letter to the 'Pharmaceutical Journal,' Mr. Callaway states, that from experience they have learned already to put much more confidence in "the white man's dose." The latter consisted of turpentine and castor oil, the time-honoured remedy among ourselves. We are not able from Dr. Peacock's cases, to institute any comparison between turpentine and the fern oil, and can only state that we believe he is supported by several other hospital physicians who have given much attention to this matter, in maintaining that the latter ought to stand *facile princeps* among our anthelmintic drugs.

As regards the economics of the question, which are important in hospital and union practice, it will, of course, be easily granted that all things considered the most efficient remedy will probably in the end prove the cheapest. A dose of castor-oil and turpentine, undoubtedly, costs far less than any of the others. Next to it comes the kousso, which has as rapidly fallen in price as it has in general estimation. The kameela is, as yet, rather expensive, though not nearly so much so as the fern oil. A full dose of the latter costs eightpence, of the kameela about four-pence, of the kousso three-pence, and of the turpentine and castor-oil not more than three-halfpence.

Kuchenmeister, in his 'Manual on Parasites' (Sydenham Society's edition), writes of the oil of turpentine as follows:—"As has already been remarked, the touchstone of a remedy for tapeworm is not whether it expels *bothriocephalus latus* or *tænia solium*, but whether it is

* We are informed that great care is necessary on the part of the dispenser, in order to avoid disappointment in the use of the oil of fern. The ethereal solution which is by far its best preparation, on standing deposits its resinous principle. A prolonged shaking is necessary to secure re-admixture. Unless the dispenser pay more than usual attention to this matter, the patient is very likely to get a dose which is but little more than ether.

also capable of effecting this with *t. medio-canellata.* That oil of turpentine is efficacious in the latter case I can prove at any time; for the finest specimen of *tænia med.* that I ever saw was expelled by it. In general also it acts pretty rapidly. Lastly, it has also the advantage that it expels the worm entire." Of the kousso he writes, "For my part I have always been more or less unlucky with this remedy. I have generally seen the worm expelled in innumerable fragments. I have never found the head. In one case I detected fragments in the evacuations for three months." Professor Martius of Erlangen, who also has used kousso largely, never saw the head brought away. Of the male fern, Kuchenmeister states: "This remedy, which will always maintain its renown against the *bothriocephali*, appears hardly to maintain its reputation with regard to tænia." The kameela he had of course not tried.

Of the desirability of having the intestinal canal as empty as may be before giving anthelmintics, most practitioners are aware. To administer them fasting in the morning is usually thought sufficient, but in cases where difficulty has been encountered in destroying the animal it may be well, as an introductory measure, to give a sharp purgative.

Imperfect Results from Kameela.—A boy, aged five years, was admitted on May 13th, under Dr. Peacock's care, known to have suffered from tænia for six months or more. Two doses of kameela (a drachm each), were ordered to be taken on alternate nights, and to be followed in the morning by castor-oil. After the second dose some fragments of the lower part of a tænia was passed quite alive. On the 20th, the medicines were repeated, and again on the 27th. Three hours after the last some portions of the tænia came away, but not the head or any part near it.—*Med. Times and Gazette, Nov.* 6, 1858, *p.* 472.

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